27 no.5

PEST CONTROL

MAY
1959

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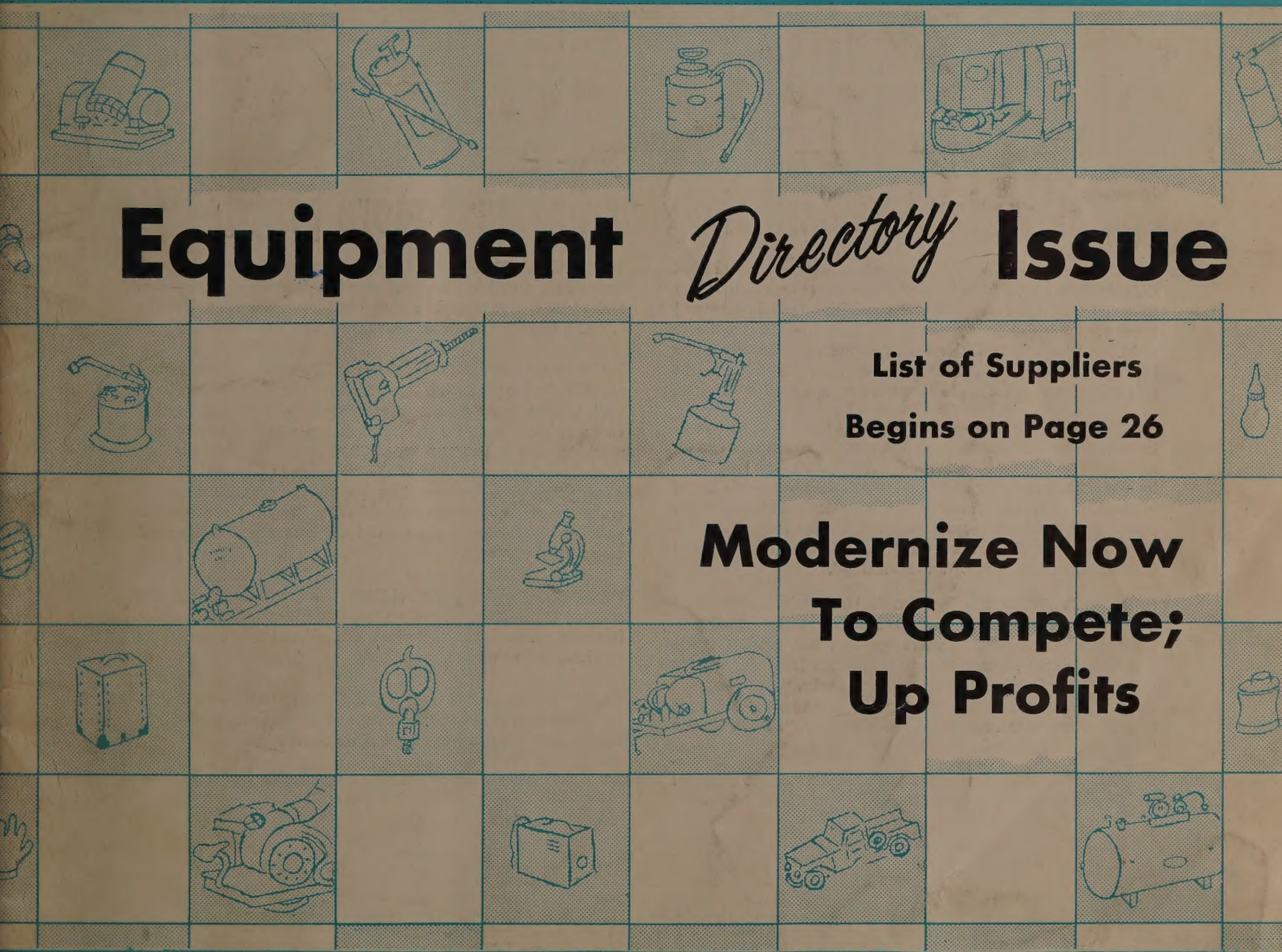


Equipment *Directory* Issue

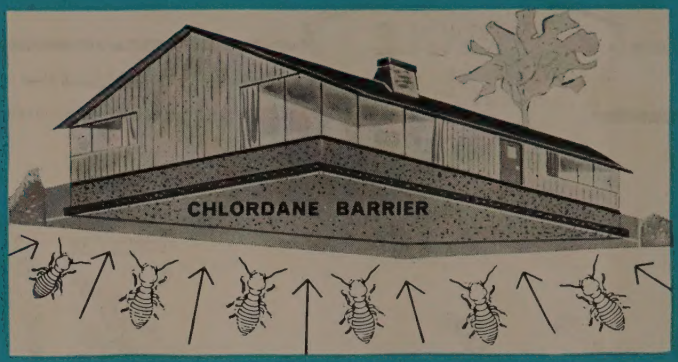
List of Suppliers
Begins on Page 26

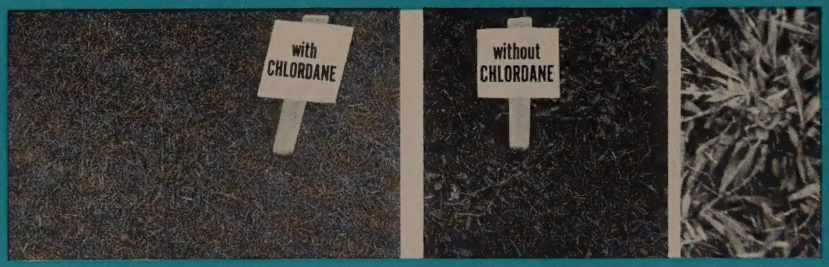
Modernize Now To Compete; Up Profits

Monthly Magazine of Methods Chemicals and Equipment for Urban and Industrial Pest Control and Sanitation Since 1933

A SPECIAL REPORT for PCO's

The demand for Chlordane has jumped sharply in the past year. Many Pest Control Operators report that the mere mention of Chlordane is a tremendous selling aid. This report explains why Chlordane's many long-time friends suddenly have a tiger by the tail.





How Chlordane helps make your business more profitable!

RECOGNITION—A recent independent survey showed that Chlordane has by far the highest consumer recognition of any patented insecticide chemical. Close to 70% of people surveyed know what it is and what it's used for. If a pest control operator mentions that he uses Chlordane, 7 out of 10 customers know they are getting a chemical of established effectiveness. In this way, Chlordane adds to the value of pest control services.

RECOMMENDATIONS—Chlordane has proven to be exceptionally versatile. Year by year, the uses for which it is recommended have increased. State and U.S.D.A. publications list it for the control of many of the most troublesome insects found in the United States. These recommendations are seen by the public, and reported in newspapers and magazines. They influence your customers to want their homes treated with Chlordane instead of just "an insecticide".

RESIDUAL ACTION—Chlordane's long record of residual action is like money in the bank to PCO's. Homes treated professionally more than 11 years ago are still getting 100% effective residual protection against termites from the original Chlordane application. When a customer asks, "How long will this termite treatment last?" you don't have to say, "I think it might last more than five years." You can say, "I know similar treatments have lasted over 11 years!"

ECONOMY—Chlordane is still the most economical chemical widely recommended for termite control.

PHYSICAL PROPERTIES—Chlordane is alkali-stable, noncrystalline, and has no offensive odor. These properties give Chlordane longer residual action in all types of soils, and make it much more desirable for use around dwellings.

NEW MARKETS—Demand for Chlordane has increased steadily. In the past year, though, Pest Control Operators have used much greater quantities of Chlordane. This is partly because of Chlordane's reputation, and partly because of new markets that have developed. Chlordane's effectiveness has made it an important part of the big boom in pre-treatment of construction for termites. The popularity of Chlordane for crabgrass control has also helped PCO's. They can now provide combined crabgrass-insect control for homes and landscaped commercial property.

PROMOTION—Pest Control Operators are given strong sales support through the Chlordane "Sales Builder" program, which includes promotional materials, educational literature, news services, and other free materials.

BUILD YOUR BUSINESS WITH CHLORDANE—By featuring Chlordane in your own selling and promotions, you will be able to gain the full advantage of its popularity.

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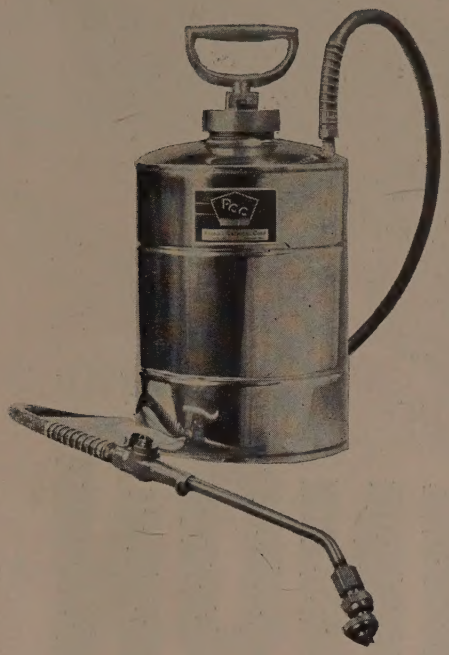

SPRAYERS

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PEST CONTROL

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Editor and Publisher
JAMES A. NELSON

Assistant Editor
PHIL OSBORNE

Circulation Manager
R. J. HOFFER

Advertising Staff
National Promotion
RICHARD G. FARRELL

East Coast
THEODORE RIEDEBURG

West Coast
JAMES E. MUNFORD CO.

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Advertising Offices:
New York
Theodore Riedeburg & Associates
415 Lexington Avenue
Phone: MUrray Hill 7-1488

California
James E. Munford Co.
South Pasadena
1425 Mission St.
Phone: RYan 1-3397

San Francisco
420 Market Street
Phone: DOuglas 2-3899

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The Biggest Overhead

Labor is the biggest overhead item every pest control operation has and manhour costs will continue to climb through inflation. Obviously then management must work toward using manpower more efficiently to eliminate non-productive time.

The volume of work has increased, but pricing has lagged behind, meaning PCOs are doing more but getting relatively less for their efforts. Price increases are necessary, but equally important is the need to modernize service equipment.

We'll bet many companies are using old equipment that has been amortized long ago, and thus it is not only ineffective, but of no value as a tax deduction. The expense of new equipment can be spread over several years to reduce taxable income, but more significantly, it enables you to keep up with, or move ahead of your competition by offering the public a broader service.

Area insect control, ornamental pest control, soil poisoning, weed control; these are just some of the new markets that open up when you have large capacity sprayers and dusters. Resistance problems require specialized equipment that'll put your chemicals where you want them without dripping and spurting.

You'll get more productivity from your largest overhead, labor, through equipment modernization. Start now by checking the listings beginning on page 26.

Discontinue using the May 1958 Directory. Much of the information in it is outdated and suppliers' addresses have changed.

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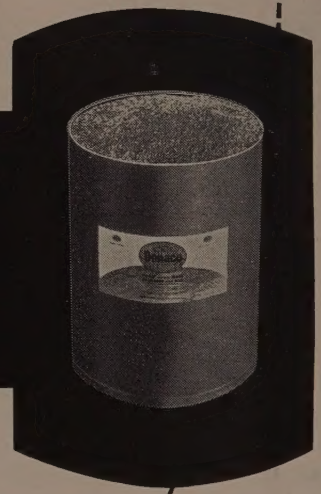

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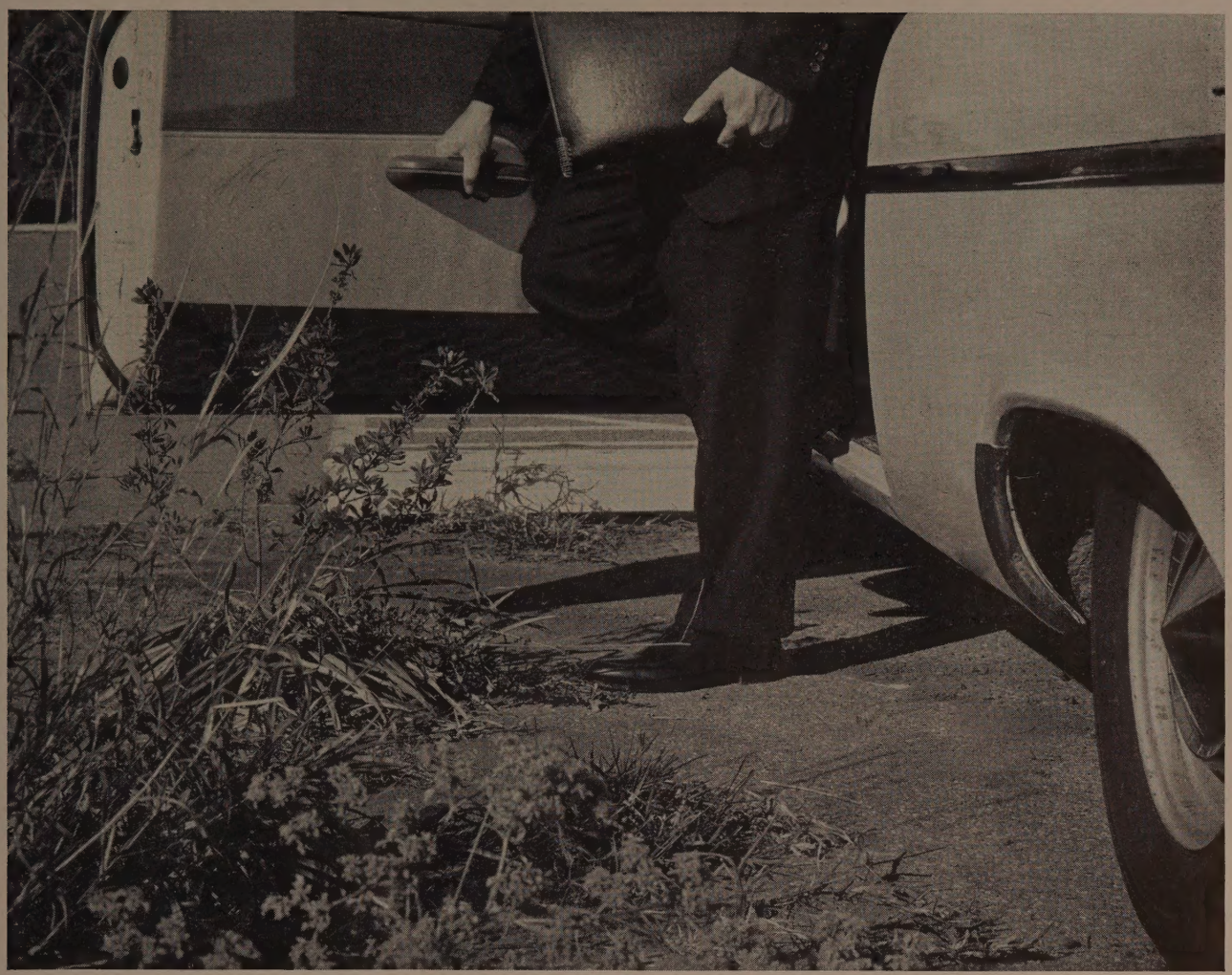

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For Area Insect Control

by J. J. PATERSON[1]
Associate Professor of Agricultural Engineering
Southern Illinois University
Carbondale, Illinois

DIFFERENT types of area insect control require different types of equipment. That's why controllers must familiarize themselves with the equipment available and how each operates so it can be maintained properly.

There are four main types of application equipment, all with somewhat different fields of use. They are:

1. Hydraulic Sprayers of various sizes;
2. Mist or Blower Sprayers;
3. Aerosol Generators;
4. Granular and Dust applicators.

Hydraulic Sprayers, because of the relatively large particle size they produce (100-200 microns)[2], and because of the larger volume of liquid required, are used for small areas difficult to reach with machines giving greater coverage.

Mist or Blower Sprayers use a large fan to displace air within an area with spray-laden air. In such a sprayer, the same volume of chemical may be applied, using only about 10-30% of the volume of water needed for the high volume hydraulic sprayer. The amount of water needed is thus much reduced. Such equipment is relatively high in cost, but the smaller particles it produces (80-100 microns) are carried a considerable distance in high velocity air and do an effective job for residual sprays in bush or open land or for larviciding. They are usually not as good as fogging machines for flying adults.

Foggers and Aerosol Generators use heat or other means to break up the insecticide into small particles (10-50 microns) and disperse it in the air. Both small and large machines are available. Their effectiveness depends upon the insecticide contacting flying insects, hence they are used for control of adults. Such machines are not suitable for areas less than 1 acre, for the fog is placed almost entirely by wind. Particle size is important. If fog particles are too small they will be deflected around the insect during flight. If too large, there will be too few particles, and they will settle too rapidly. (See two charts below.)

Recommended Particle Size (Microns) for Various Swath Widths and Wind Velocity[3]

Swath Width in feet	Wind vel. (mph.) 1	3	5	7
100	40	70	90	100
200	30	50	65	75
300	25	40	55	65
500	20	35	40	50

Distance Traveled by Particles While Settling 10 ft. in 3 mi. Wind

Aerosol or fog	10 microns	1 mi.
" "	20 microns	2000 ft.
Mist	100 microns	50 ft.
Drizzle	200 microns	15 ft.

Temperature inversion should also be considered when using aerosols. This occurs most often in early morning and after sunset when the temperature near the ground is slightly cooler than it is higher up. The cloud of insecticide is thus kept from rising.

Dust and Granular Applicators have so far been used less than the first three types of equipment. Experiments with granules applied to snow or to frozen ground have shown that very good control may be obtained using volume dusters.

Next let us consider in detail some of the important parts of volume applicators of insecticides.

The engine is as indispensable a part of most spray rigs or fogging machines, as it is of the truck which carries the unit. Slow ground speed and/or slow motor speed, resulting in only part-load operation of the truck motor, will tend to foul its spark plugs. A hotter plug may be required. Batteries may be hard to keep charged when running at slow speed with lights on at night. They should be checked and a charger used when necessary. A spare battery may also be kept for emergencies if several units are in use.

Which Oil, Fuel to Use in Equipment

Crankcase oil in an engine is important. Most operators are familiar with S.A.E. viscosity numbers indicating weights of

---

1. Presented at the 1959 Meeting of the Illinois Mosquito Control Association, March 2-3.

2. 1 micron = $\frac{1\text{mm}}{1000}$ or $\frac{1 \text{ inch}}{25000}$

3. USDA Yearbook Insects, 1952, p. 244.

oil. But, too few know that it is now standard procedure for refineries to indicate on the can the type of service for which the oil is recommended. The terms ML, MM, MS, and DG, DM, and DS are used. The first three are for spark ignition engines, for Light, Medium, and Severe service. The last three are for Diesel engines. It is suggested that an MS oil be used in both water and air cooled engines, but the manufacturer's recommendations should always be followed. Additive type oils should generally not be mixed, but brands may be changed when oil is drained.

Fuels are even more important, especially with air cooled engines. Research at the Dominion Experimental Station, Saskatchewan, Canada, has shown that the best combination for air cooled engines is a heavy duty or MS oil and non-leaded gasoline. A good friend of mine, Jack Stansfield, field manager of a large mosquito control district in Winnipeg, Canada, has six such engines. In 1956, using No. 2 gasoline with some lead, twelve valve overhauls were needed as well as an annual overhaul at a total cost of about $344. In 1957 with non-leaded fuel, no extra valve jobs were required—only an annual overhaul at a cost of $162. In 1958 one engine was inspected, at a cost of $8, and no other work was necessary. Air cooled engines are sensitive to lead in fuel. It should be remembered that lead in fuel is used to increase octane number only and thus increase maximum power. With engines on trucks used for fogging and other slow speed work, the lower priced fuel can be used, for maximum power is seldom if ever needed.

Spraying machines, whether for mist, fog, or spray have a number of parts in common which require attention. We shall discuss the more important of these.

High, Low Pressure Pumps

Pumps for low pressure, say 100 lbs. or less, are of the gear, nylon roller, or vane type. Gears are excellent for liquids with lubricating qualities such as oils or emulsions of DDT but are not suitable for wettable powders because of abrasive action. Such pumps have a reasonable length of life at low pressures and are cheaper to replace. Nylon roller types have shown up best in tests made at Oklahoma A & M College. Piston and plunger pumps, both reciprocating types, have been standard for many years. They are a more expensive pump; hence are used where high pressures (100-800 lbs.) are required. They are used for almost any spray material over a wide pressure range. Some types attach directly to the power take-off. Maintenance is relatively simple. Plungers and valves will need replacing periodically. Packing nuts on reciprocating or rotating shafts should be tightened only enough to stop leaks.

Some rotary pumps have drain holes to keep water from reaching the bearings. These should always be open. Follow lubrication instructions carefully. Some pumps require water pump grease. However, the new lithium base all purpose grease will pump easier through a grease gun and is suitable for other types of bearings as well.

Regulating the Pressure

A pressure regulator and pressure relief valve is essential to maintain a uniform spray delivery. A simple ball and spring is the common type at lower pres-

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sures. A better regulator is the diaphragm type and may be worth the difference when spray is costly.

For high pressures, the regulator has another important function, that of automatically unloading the pump as soon as the gun is shut off. This reduces wear on parts.

The pressure gauge is the most important indicator to the operator that he is applying the proper spray gallonage. The cost of a good gauge, at least 3 inches in diameter with easily read graduations, would seem to be money well spent.

If the gauge indicator fails to return to zero, its reliability should be questioned. A gauge tester is the only accurate check. Next best is to compare readings against a new gauge which may be assumed to be accurate. If an air tank is available in the operator's shop, the gauge in question may be connected to the air hose. Then, if we assume the gauge on the air tank to be correct, both gauges should read the same. The gauge being tested should have the same or higher range than that of the air tank; otherwise damage may result. Spray material wasted each season because of an inaccurate gauge can easily exceed the cost of a new one.

What to Look For in Nozzles

The nozzle is the mechanism which controls both the size of the droplets and the uniformity of coverage in hydraulic sprayers, and is one of the main factors controlling gallons-per-acre in all types of sprayers. Fixed orifice nozzles may be obtained to spray in different patterns and at different angles of fan, or cone. Spray tips are machined to very close tolerances.

Nozzle erosion can even result from spraying of water, which will markedly increase the gallonage of chemical used per acre. Nozzle tips should be inspected each year or oftener and replaced if necessary. The spray saved can soon pay for new tips. Wire or other metal should never be used to clean tips.

Manufacturers' ratings of spray nozzles showing gallons/minute or gallons/hour are the best method of checking a nozzle. Gallons/minute x 128 = ounces per minute. Using a container graduated in ounces, the ounces per minute delivered can easily be checked with the machine running at operating pressure. Gallons acre of liquid applied will depend upon speed of travel and width of swath according to the following formula:

$$\text{Gals/acre applied} = \frac{\text{oz/min delivered} \times 3.867}{\text{mph} \times \text{swath (ft.)}}$$

or

$$\text{Oz/min delivered} = \frac{\text{rate in gals/acre} \times \text{mph} \times \text{swath (ft.)}}{3.867}$$

The "3.867" in this case is a constant which results when you simplify the following formula:

$$\text{Gals/acre being applied} = \frac{\text{oz/min}}{128} \times \frac{43560}{\text{mph} \times 88 \times \text{swath (ft.)}}$$

128 = no. oz in 1 gal.

43560 = no. sq. ft. in 1 acre

88 = no. of ft. travelled per min. at a ground speed of 1 mph.

A test run for a sprayer is made in the following way:

1. Make sure sprayer is in operating order with liquid in all lines.
2. Fill tank with liquid to a marked depth.
3. Operate sprayer for ¼ mile at normal speed and pressure.
4. Measure liquid by refilling tank to mark.

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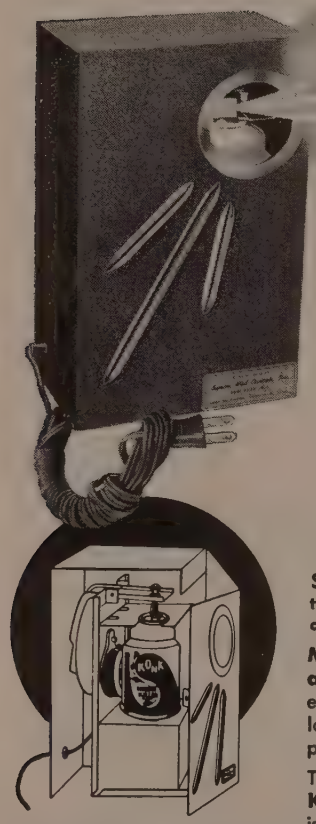

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THIS SIGN OF A THOUGHTFUL FOOD ESTABLISHMENT IDENTIFIES YOUR SERVICE, builds goodwill. Make sure this colorful decal appears on the window of every food establishment you service with SYNCRO-MIST Controls! They're FREE!

THIS ESTABLISHMENT IS FOR YOUR HEALTH AND COMFORT SYNCRO-MIST CLEAN

SYNCRO-MIST CONTROLS, INC. 270 Madison Avenue, N. Y. 16, N. Y.

5. Gals/acre applied = $\frac{\text{gals to fill tank x 33}}{\text{width of swath (ft.)}}$

Example: 5 gals. to fill tank, 100 ft. swath

Rate in gals/ac = $\frac{5 \times 33}{100} = 1.65$ gals/ac.

In this case, "33" is a constant, derived from the following, simplified formula:

Gals/ac. being applied

$= \frac{\text{gals. to fill tank (after ¼ mi. run)}}{\text{acres covered}}$

$= \frac{\text{gals. to fill tank}}{\frac{5280}{4} \times \frac{\text{width of swath}}{43560}}$

$= \frac{\text{gals. to fill tank}}{\frac{\text{swath width}}{33}}$

$= \frac{\text{gals. to fill tank x 33}}{\text{width of swath in feet}}$

This method will give gals/ac. regardless of poor nozzles, inaccurate gauge, or errors in speed. The particular formula is only correct for a 1/4 mile run.

Keep Nozzle Filters Clean

Adequate filters are necessary to keep nozzles from clogging. The most common location is on the suction side of the pump but other locations may be used. The main filter should be easily accessible for cleaning with a minimum loss of spray liquid.

Corrosion in Tanks

In choosing a spray tank, resistance to corrosion is an important factor. Stainless steel is probably best, but it is costly. A few years ago I tested a number of spray materials with metals, metal coatings, and non-metals. Some coatings are available which are more resistant to spray chemicals than galvanized iron or aluminum. A new tank should be flushed out thoroughly before using. If chemical is to be added to liquid already in the tank the operator should have an accurate gauge stick to measure liquid remaining; otherwise errors in mixing are sure to occur.

Application equipment should always be ready to operate when needed, and during the operating season have on hand some spare parts such as valves, hoses, clamps, filters, and spark plugs.

Cooling systems of air cooled engines should be cleaned at intervals. Oil and dust quickly form a coating which will further increase operating temperature of a hot running engine. Such engines should be warmed up at

convenience and economy in liquid bait rodenticides . . .

. . . FUMASOL formulations, premeasured or bulk for the sure kill!

NOW you can choose from two highly effective anticoagulant rodenticides to fit your pest control requirements. FUMASOL-A or FUMASOL-C—both being used extensively in the field by PCO's for practical control of rats and mice . . . both proving their efficiency in convenient baiting and in a noticeable lack of unscheduled call-backs!

FUMASOL-A bulk packed for long-run economy!

A one-pound can of FUMASOL-A costs only $4.75, makes 40 full quarts of bait solution. *That's less than 12¢ a quart!* You save money and get effective control in the bargain. FUMASOL-A contains a mold inhibitor preservative to give solution added life at the bait station.

FUMASOL-C premeasured packets to prevent costly overdosing!

Cut your time-per-service-call to the bone by using FUMASOL-C in the convenient premeasured packet. Each packet makes one full quart of effective, long-lasting bait, dissolves instantly in hard or soft water and contains a mold inhibitor preservative to keep solution fresh and effective for weeks.

Get FUMASOL formulations from your distributor now—whatever your preference, it'll help you put operations on a more profitable footing!

by the manufacturers of FUMARIN rodenticide

AMCHEM

FUMASOL

another chemical development of
AMCHEM PRODUCTS, INC.
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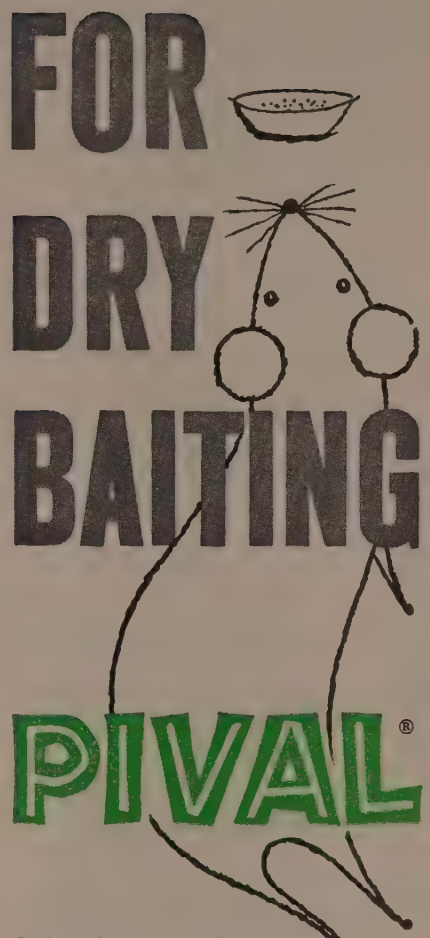

It doesn't take long for a good thing to get around. That's why, PIVAL is now the choice of leading P.C.O.'s across the country. Why? Because PIVAL works—it's an effective killer; and it's easy to use—saves you time and effort.

PIVAL is tops in acceptability! Tests with other anti-coagulants show PIVAL has substantially greater acceptability, offering more effective control.

PIVAL resists insects! PIVAL baits are less subject to insect infestation even under severe conditions which means baits remain uncontaminated longer.

PIVAL resists mold! Even under tough conditions, PIVAL baits remain mold-free and attractive to rats longer.

Join the leading P.C.O.'s who pick PIVAL for dry baiting. Now time-tested, it's been proven tops for controlling Norway rats, roof rats and house mice. Order now.

MOTOMCO, INC.
TERMINAL AVENUE • CLARK, N. J.

part load; and run idle for 3-4 minutes to cool off before shutting down. Check engine compression often.

Follow Instruction Manual

One of the most difficult things for an operator to do seems to be to read the instruction book for a new machine. Good mechanics are often the worst offenders. All points of lubrication should be checked and double checked. Belts and chains should be checked for alignment and tension. Strainer and screens should be regularly inspected and cleaned. Make sure all pumps prime immediately after starting.

When corrosive liquids are used, the sprayer should be flushed after each use. When storing for winter, remember that 90% of corrosion takes place while the sprayer is idle, especially when water is used. All strainers and screens should be disassembled and cleaned in solvent using an old toothbrush. All liquid lines should be flushed out. After assembling, if water is used in the system, pour 2-5 gallons of clean new or used oil into the tank and fill with water. Start the pump and pump out. All parts of the system will be coated with a film of oil. Be sure drains are open to prevent freezing in winter.

Some Safety Tips

I must not conclude without a few safety reminders.

Fogging machines which burn oil should be kept clear of all unnecessary waste.

A fire extinguisher should be ready for action at all times when operating.

Operators should watch for danger labels on pesticides. D.D.T., lindane, and malathion are classified as safe. Dieldrin and aldrin are intermediate. Parathion is not safe. The use of non-splash pouring devices, proper clothing, rubber gloves, and respirators should be used where indicated. Avoid skin contact with all insecticides and do not eat or smoke after handling, before washing hands thoroughly. It pays to be a careful operator.

Suggested References

Insect Pests of Farm Orchard and Garden, 5th edition 1956. See chapter 7 for formulation and dilution tables. Peairs and Davidson. Wiley and Sons Publishing Co., 440 4th Ave., New York, N. Y.

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Machinery and Equipment. Smith. 1955. Chapter 13. McGraw-Hill Book Co., 330 W. 42nd St., New York, N. Y.

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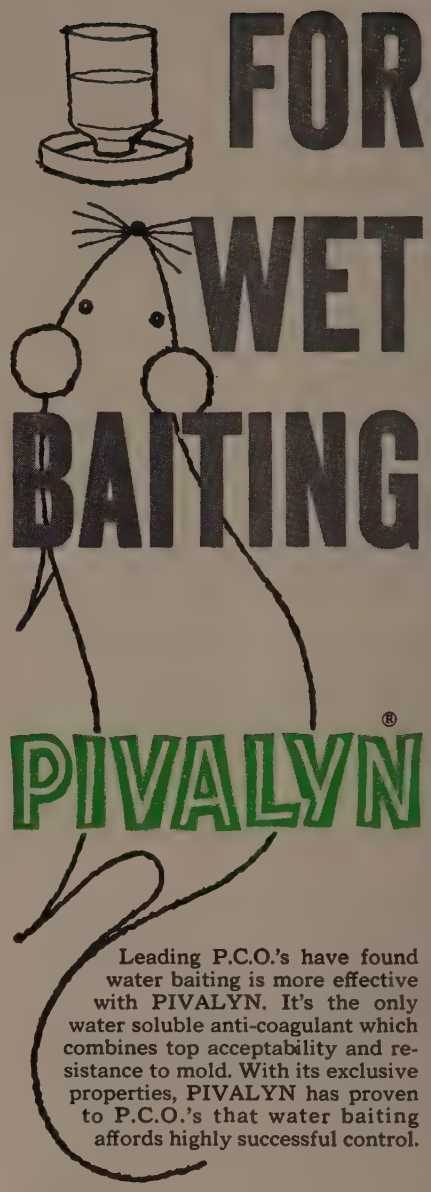

Leading P.C.O.'s have found water baiting is more effective with PIVALYN. It's the only water soluble anti-coagulant which combines top acceptability and resistance to mold. With its exclusive properties, PIVALYN has proven to P.C.O.'s that water baiting affords highly successful control.

Another reason P.C.O.'s pick PIVALYN is its ease of use. It's packaged as a 1.5% concentrate in convenient individual foil packets. One PIVALYN packet to one quart of water — that's all there is to it! As a "taste-treat" for rodents, and under conditions difficult to control, sugar may be added to the PIVALYN solutions.

And you needn't worry about mold! PIVALYN water baits normally remain mold-free for periods up to eleven weeks.

So, join the leading P.C.O.'s who pick PIVALYN for water baiting. A worthy companion to PIVAL, it, too, is tops in its field. Order a box of 100 packets now.

MOTOMCO, INC.
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How a "Club Plan" helps sell Bagworm Control On Evergreens

JOIN THE
STONE CITY PEST CONTROL
EVERGREEN SPRAY CLUB
We Spray Twice For Bagworms
If Additional Care Is Needed to Control Bagworms
No Additional Charge
Dial BR. 5-4501 Your Trees Sprayed $_____
FREE TERMITE INSPECTION
Roaches-Water Bugs or Any Pests
Member Bedford Chamber of Commerce

by **CLIFFORD HALEY**
Stone City Pest Control, Bedford, Indiana

WITH HIS EQUIPMENT and skills, the PCO is passing up a valuable piece of business if he doesn't investigate the market for bagworm control on evergreens. In the late spring and summer, two well-trained men with a power sprayer and a truck can net $100 a day with this service, and at the same time, possibly pick up some termite or general pest control work along the way.

We've had our best luck with a "club" plan. Before we formed our club, we had many calls from home owners who wanted us to spray their evergreens for bagworms. These requests usually came at a time when we were busy with termite work. This set me to thinking: why wait until the home owner notices infestation and damage? Let's offer him year-to-year protection before bagworms show up. But then another question confronted us: how practical is it to clean a tank just to go out and spray a few plantings each day?

To count on a steady, dependable volume of evergreen spraying business, I decided to form the "Evergreen Spray Club." I thought we could set aside a few days in June and July and place a truck in service for this business alone. To get the club off the ground, I put a two-column, 4-inch advertisement in the local newspaper, inviting people to join the club. The calls rolled in.

To back-up our advertising, we sent solicitors door-to-door, estimating the cost for spraying the evergreens at each residence they called on. If no one was home, our representative prepared an estimate anyway, wrote it on a card which explained our service, then slipped it under the door.

For each evergreen shrub up to 6 feet tall, the charge is 50 cents for members and non-members. If plantings measure between 6-15 feet, the price is $1 each, and if they are over 15 feet high, $3 is charged. The minimum club price for an over-all treatment is $5. Non-members pay a $7 service fee in addition to this $5 minimum. Should a member cancel out and then call us later, we charge him the regular non-member price for a service call and he may re-enroll in the club.

We spray club members' evergreens twice for bagworms. If additional treatment is needed, there is no extra charge, but callbacks are a rarity. Out of 230 plantings treated in 1957, we had to give additional care to only four; and of 309 last year, we retreated seven. Club members are also given special rates on other calls for plant sprayings. Many shrubs and flowers are treated for a token fee of $1.

By volume selling, good routing, and billing customers out of our office—not on the call—we are able to keep our costs and prices down. This results in good public relations. We've had customers say, "You can't do this for only a dollar," and want to give us more. When we turn them down, it doesn't surprise us to receive a call from them later for some pest control work in their homes.

Spray First in Early Summer

To keep this service profitable for you and the customer, you've got to know the bagworm life cycle. This tells you when to spray. The eggs hatch in the bags and the worms spin a silken bag which they carry around with them, adding bits of the leaves they feed on, to the bag. The worms are easily killed when first hatched, so this is when we give plantings the initial treatment. In the area around Bedford, Ind., eggs usually begin to hatch before June 14, but the date will vary from one section of the country to another. I keep a close watch on plantings after the first of June.

For this first spray, we use 1½ pints of 57% malathion with DuPont spreader-sticker in 100 gallons of water, applied at 125 lb. psi pressure until the tree is thoroughly covered and a run-off is obtained. I use a 60-gallon capacity Quincy compressor, manufactured by Quincy Compressor Co., Quincy, Ill., with 150 feet of 3/8" I.D. Diaprene carry-all hose, from Industrial Air Equipment Co., Indianapolis, Ind. This compressor is powered by a 2 hp Briggs and Stratton gasoline motor. Our pump is manufactured by Hypro Engineering, Inc., Minneapolis, Minn., and is used with a 250-gallon fuel oil tank.

Spray Again A Few Weeks Later

After 18-34 days, the second spraying is given. We increase the strength of the formulation to 2 pints of 57% malathion per 100 gallons of water. This time, we also spray near-by shade trees and the gutters. These two sprayings should take care of all plantings treated.

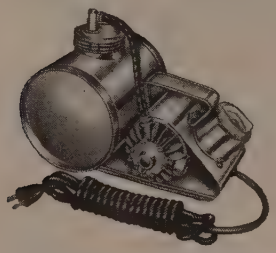
Be cautious with the chemical when you spray. There are few things that upset the lady of the house more than messed-up windows. Ferns and some flowers can be harmed by malathion, so unless you are well trained in

You get profit-performance with HUDSON Sprayers and Dusters

FOR "DRIP-NOT" SPRAYING...
the X-Pert® compression sprayer...the sprayer that maintains selected nozzle pressure to apply pesticides most effectively, precisely, economically, profitably. Has every feature you need. In galvanized or stainless steel...4-, 3- and 2-gallon sizes.

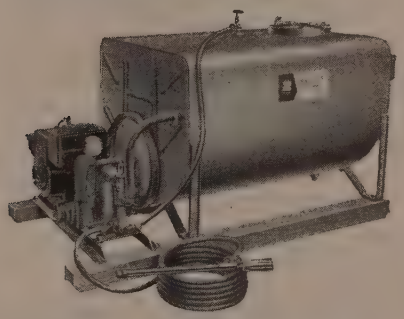
FOR SELECTIVE DUSTING...
the Admiral*, world's best known duster. Applies any powder, including Cyanogas for rodent control. Has pre-lubricated plunger, valve that keeps dust out of pump, 21-inch extension tube with all-angle swivel nozzle. Holds about a pound of dust.

FOR APPLYING INSECTICIDES,



disinfectants, deodorants...the Rival® electric sprayer with time switch for unattended spraying. Fine for closed area treatment. Has 3-quart stainless steel container. Also the Wizard*, with 24-ounce graduated glass jar container. Discharges about an ounce per minute in fine fog.

FOR POWER SPRAYING...



The Matador® or Peerless* available in 15-, 30-, 50-, 100-, 150- and 250-gallon sizes, up to 10 gpm discharge and pressures to 600 psi, on skids for your truck, or on tires. All-purpose sprayers suited to all the profit-producing spraying jobs you want to do.

FOR POWER DUSTING...

The engine-powered Bak-Pak*duster. It's comfortable to carry, has left-hand finger-tip control of engine and dust feed. Ideal for large area coverage. Available with mist attachment to assure adherence of dust or to spray liquid concentrate.

for complete details, mail the coupon

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H. D. HUDSON MANUFACTURING COMPANY
589 E. ILLINOIS ST., CHICAGO 11, ILLINOIS
Without obligation, please send information, as checked:
☐ Compression sprayers ☐ Electric sprayers
☐ Power sprayers ☐ Hand or ☐ power dusters

NAME _____
ADDRESS _____
CITY _____ STATE _____

plant identification, keep your chemical confined to the evergreens.

Late-Season Treatment

As the worms mature, they are increasingly difficult to control, and a stomach poison is necessary later in the season toward the end of July or the first of August. We use arsenate of lead, at 6-8 pounds per 100 gallons of water, but it must be applied carefully since some trees, such as blue spruce and arborvitae, are subject to foliage burn. Arsenate of lead also is unsightly in certain formulations. Because most evergreens take on a dusty appearance from the residue, I stay away from this chemical except on late-season callbacks.

But sometimes it may be even too late in the season for chemicals. When a club member has not called us until August after our first two treatments did not eliminate a bagworm infestation, we have gone so far as pick the bags from the tree.

Expanding the Business

Our club has grown so rapidly, we plan to purchase a larger tank and another gasoline motor for this season, along with 150 feet of hose and a Ewing diaphragm pump or a Hypro pump which we can also use in our termite work.

In addition to evergreens, we also control insects on roses, other flowers, and trees, but a careful study of insecticidal formulations, a knowledge of plant and insect identification, as well as recognition of the cause of damage are necessary if your service is to be broadened.* Insecticides are no good for a virus unless insects are the vector or a contributing cause.

Unless you or your men are trained in this field, leave the general horticultural business to your local nursery. The same holds true for bagworm control on evergreens. This can be a valuable, new market for PCOs in the spring and summer, but it's like any other pest control work —you must know your insects and your chemicals before you begin to offer this service.

* From writer Haley—two suggested references for information on insect pests of roses, other flowers, and trees: **Destructive and Useful Insects**, by Metcalf, Flint, and Metcalf, McGraw-Hill Book Co., 330 West 42nd St., New York 36, N. Y.; **Insect Pests of Shade Trees and Shrubs**, Mimeograph E-41, Department of Entomology, Purdue University, Lafayette, Ind. For more details on these pests, or others that attack evergreens, check also with your local Farm Bureau or State Agricultural Extension Agent.

DOW | **INSECTICIDES**

KORLAN 24E . . .

gives you new markets, new profits, new safety in spraying both food processing and Federally inspected meat packing plants.

PCO's confirm what laboratory tests proved: Korlan® 24E packs a powerful residual action that's effective up to six weeks after application. This is one of a combination of advantages you get with no other insecticide.

Korlan 24E kills even resistant roaches fast as well as flies. Its whiff of odor disappears in a hurry—but not its killing action. Its low toxicity for both humans and animals makes Korlan 24E safer to apply in restaurants, homes, stores and food processing plants.

With Korlan 24E you can tap new and highly profitable markets. Mail the coupon today.

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Agricultural Chemicals Sales, Dept. 231DS-5
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☐ Please send me additional information about KORLAN 24E.

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THE DOW CHEMICAL COMPANY • MIDLAND, MICHIGAN

Cut some of those needless route costs, provide customers immediate service without backtracking, and handle termite pre-treat jobs more efficiently with

Two-Way Service Vehicle Communication for PCOs

For the last nine months, PC reporters have been shooting questions at mobile radio manufacturers, Federal Communications Commission officials, and pest control operators who use two-way communication in their service vehicles. The editors wanted to know just how practical this equipment is for the PCO. Here's what our reporters found.

IN CITIES where service dependability and pricing are at least moderately uniform, the PCO's success may hinge directly on those "extra" little services he performs. And chief among these should be quick action on a call —emergency or otherwise. This has prompted many small and large operators alike to install two-way radio or telephone communication in their service vehicles, and recently helped lead to the establishment of a special "Business Radio Service" by the Federal Communications Commission, opening up new longer-range mobile radio frequencies for the PCO.

Not only does office-to-vehicle communication permit more rapid dispatching of servicemen, but it also eliminates costly backtracking, as well as the need for servicemen to telephone their office two or three times daily. With two-way radios, termite operators on soil pretreatment jobs can be dispatched to construction sites just before they are needed, rather than waiting several hours on the job while workmen ahead of them finish up. Often, a contractor may call for treatment only an hour or two before the footing is poured. So the operator must be able to divert his men to the site on a moment's notice.

If a vehicle breaks down, with two-way communication the driver can contact the office immediately for assistance or to have another routeman double up for him until repairs are made.

But most important is the greater flexibility two-way communication gives the PCO. He is able to divert key personnel for emergency calls, alert servicemen to changes of job assignments, speed rush calls for service, and generally be "on the job with his men" while he's in the office.

"With continuous control of men and vehicles," according to Radio Corporation of America's A. M. Hilliard, "overtime charges are reduced since last-minute jobs can be handled quickly by a radio-equipped vehicle in the area. If necessary, special chemicals or equipment can be dropped off with a serviceman by dispatching another serviceman in that same area to him. Savings that continue to grow daily not only pay for the radio equipment, but help increase profits by reducing operational costs."

Manufacturers have special technical representatives to aid PCOs in selecting the best two-way system for their work, and to set units up and maintain them efficiently. To help its two-way radio buyers exploit the advertising value of mobile communication, RCA even furnishes its customers special advertising aids, including decals and radio code stickers for vehicles.

But advertising seems to be of only secondary importance to many PCOs who already have office-to-vehicle communication. J. C. Redd of Redd Pest Control Co., Inc., Jackson, Miss., says he has never used his two-way radios as an advertising tool, instead has relied upon them mainly for better organization of routes and for constant contact with his men.

"We keep a complete log on all of our service vehicles and any time the man is not in the truck, we know where he is and can contact him by telephone," Redd told PC. "Money has been saved in that servicemen do not have to double back as often as they did when we didn't have two-way radios; they don't have to call in as much, don't lose time hunting a telephone, or, if they are four or five blocks from the office, they don't have to take the time to drive back to the office without calling."

Redd has had radios in his service vehicles for four years, was one of the first PCOs in the country to try them.

"At that time, we had to go on a citizens band, since we were not qualified for the business band," he says. "However, since August 1 last year, any business is qualified on a business band. This gives more range in the lower frequency band. We are on the 450 megacycle group, but

MEET FHA TERMITE PROTECTIVE STANDARDS WITH CHLORDANE!

all formulations available now for instant shipment from Penick

Penick makes and stocks a complete range of chlordanes . . . emulsifiables, wettable powders and oil solutions in varying strengths . . . packed to suit your requirements economically. They're produced under strict quality controls for which Penick is well known. Shipment made within 24 hours!

You'll like the fast, friendly service from our new Pest Control Supply Department. Your paper work is cut to the minimum. You get what you need when you need it, backed by the best in technical service.

For chlordane and all your pesticide needs—depend on Penick!

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have applied for the 35 megacycle group."

Redd has Motorola Communications and Electronics, Inc. equipment, which is serviced by a Motorola representative. He says he has no specific problems with his radios, except that he does not get the range he would like because he is using a higher megacycle frequency.

"The working range is 15-20 miles from the antenna," Redd says. "We have one radio set up on the 35 megacycle frequency, and with it we get approximately 40 miles from the antenna."

What A Unit Consists of

A typical mobile radio installation includes a master dispatching station at the office and two-way radio units in the vehicles, powered by the vehicle battery.

"The RCA mobile unit," Hilliard states, "is approximately 15 by 18 inches. The transmitter and receiver case is mounted in the trunk or rear of the vehicle; and the microphone, control panel, and speaker are placed on the dashboard. When the vehicle radio is 'on,' it is automatically on standby position to receive messages from the dispatcher. To communicate with the main office or another radio-equipped vehicle, the serviceman need only push the microphone switch and proceed with the message."

The RCA dispatching station consists of a transmitter/receiver unit which can be installed anywhere in the PCO's building. The only radio equipment the dispatcher needs on the desk is an RCA Minitrol — a combination microphone and speaker. From this central point, the dispatcher can hear all messages and contact the vehicles.

In the Motorola two-way radio series, there are three models the PCO can choose from: the "Twin - V," "T - Power," and "Motrac." The Twin-V operates interchangeably between 6- and 12-volt electrical systems. General Electric Co. also has several units on the market.

Harder Uses Motorola

Like J. C. Redd of Jackson, Miss., Frank Harder, Jr., Harder Extermination Service, Inc., Hempstead, N. Y., has Motorola units in some of his vehicles. His units have a 30-mile range from the base station.

"These radios are in our supervisors' cars," Harder explains. "Two of them are installed for our Spray Company, for use in tree-spraying, weed control, community fogging, etc. The other two are used by supervisors in our regular pest control division, and the fifth is in my car."

Although Harder does not yet have two-way communication in his service cars or trucks, he plans to install units in them this spring or summer.

"The radios give us much closer contact with our personnel, and we can offer better service to customers," Harder continued. "With their radios, our supervisors are always in touch with their various personnel. They know the serviceman's route; so, if we need immediate service on a job and the supervisor is in no position to handle the call, he can contact a serviceman in an area who can.

"We have our own transmitter, and can talk directly to each of our cars. Our men in the cars can also converse with each

NOW -- More Lasting Mosquito Control

Jeep mounted Buffalo Turbine Sprayer operating in South Cook County Mosquito Abatement District.

Area Treated with vermiculite granules applied with BUFFALO TURBINE SPRAYER showed 75% fewer mosquitos after 120 hours, than area sprayed with DDT!

To create ground-level mosquito free areas for picnics, public gatherings, etc., the South Cook County Mosquito Abatement District sprayed equal areas with vermiculite containing 10% DDT, vermiculite treated with an insecticide oil (without DDT) and compared results with an untreated area. Insecticide oil sprayed area was mosquito free for more than 96 hours.

Modern mosquito control includes: dusting for adult control, application of wetted granules for larvae and pre-hatch control, liquid or granule spraying for spot control. Buffalo Turbine is the only sprayer dispensing liquid and dust, both at the same time or separately, with deep penetration and wide coverage for the most efficient control measures at lowest cost.

TURBO-DUSTING, SPRAYING FEATURES

- Velocities from a gentle breeze to 180 m.p.h.
- 14,000 cu. ft. of air per minute.
- Covers 100 acres per hour.
- Does not spot cars or homes.
- Penetrates a city block from vehicle on the street.
- Kills more flies and mosquitos at lower cost, than any other method.

Write for complete information.

BUFFALO TURBINE AGRICULTURAL EQUIPMENT CO., INC.
70 Industrial Street
GOWANDA, NEW YORK

other, as long as they are within 15-20 miles of each other, and there aren't any obstructions, such as hills, between them."

Practical for Small PCO

But the PCO needn't own as big and diversified an outfit as Redd Pest Control or Harder Extermination Service, Inc. to make two-way communication in service vehicles practical. Robert M. Lewis of Lewis Pest Control, Muncie, Ind., has only two servicemen, but he still found it profitable to install two-way radio units in his trucks, giving him a six-mile communication radius.

"It's a big expense at first, but the advertising value alone is worth it," Lewis claims.

One of these chief initial expenses is the antenna or aerial for the base station. These vary considerably in price, according to Lewis.

"TV-type towers do not generally go high enough for use with two-way radios," he indicated, "but if your office is located on the edge of town on high ground or if your town is not too heavily populated, a 50-foot tower might be sufficient."

Lewis said some mobile units can be purchased for $550, and the base unit or transmitter at the office would be another $600. Normally these units will last from 10 to 15 years, he said. There are other radios, that range from $50 to $2,000. These prices are consistent with Harder's figures: $500 for the mobile unit; about $700 for the transmitter.

Federal Communications Commission license provisions are generally easy to meet, according to Lewis.

"You're not required to have trained, radio-type personnel to operate this equipment," he states. "However, to service the radios for repairs, tube-removal, etc., the FCC does specify that trained personnel with a radio phone license second/class or better, be called in. These men can be found through police departments, utility companies, and other organizations who use similar equipment.

"This repair service can be purchased either on a monthly preventive basis or as needed."

R. A. Page of General Electric Co.'s Communication Products Department, Lynchburg, Va., spelled out a few other FCC license requirements.

"Generally, a license must be obtained for each base station," Page said. "Some users, however, such as taxi operators, are issued only one license to cover all base stations and mobile units. A separate equipment license is also usually required for your mobile units when more than one base station is used.

"One mobile license covers all the mobile units in cars, trucks, etc. which the PCO operates. The mobile equipment license is kept at the main station, next to the station license. And you may add mobile units to your system at any time as long as your license provides for such increases."

Page added that each mobile unit must have an FCC Form 452-C or other approved identity tag attached to it, listing the mobile call letters, licensee's name, location of the transmitter records, frequency or frequencies on which the transmitter is adjusted to operate, and the signature of the licensee. These tags are filled in by the owner of the radio units and are normally attached to the units at the time of their installation. They can be obtained by

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Only exclusive RAT JIGGER gives you all these advantages:

TIP-PROOF . . . special flared skirt fits flush to floor . . . "Jigger" can't tip even if rat steps on edge.

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TESTED AND APPROVED . . . meets rigid specifications of Federal Agencies and National Pest Control Association.

SETS STANDARD FOR QUALITY AND SAFETY . . . as incorporated in Standard Safe Handling Procedure for Compound 1080 and other Liquid Poisons.

PRICES PER M. 5M-25 M . . . $5.62 M.

5,000 TO A CASE . . . minimum order 4 cases, shipped prepaid. Larger quantity prices on request.

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___Ship through nearest distributor.
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No. 1080 RAT JIGGER Rodenticide Containers.

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Street_____

City_____Zone___State_____

TIME CLOCK
***for* Trucks**

Automatic!
Tamperproof!

- *Records every stop . . . and how long!*
- *Shows when trucks are traveling . . . and how long!*

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Here's what one customer says: "Average annual savings from reduced idle time, maintenance, bad scheduling, and overtime will amount to approximately $800 per truck, per year for our 83 units!"

Servis Recorders record busy and idle time on easily read, permanent charts. With these charts you can find the reason for delays, and tighten up on lax schedules.

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TITLE_____
COMPANY_____
ADDRESS_____
CITY_____ ZONE____ STATE_____

Adventures of Mort

THE NEW SERVICEMAN

by Gerald Curtis

"Tell me, buddy, did you know there is a hole in the bar, right over my lap?"

writing directly to your nearest FCC District Office.

"Base stations," Page continued, "can be operated only by persons holding a Commercial Radio Operator's license or a Restricted Radio-Telephone Operator's permit. Non-holders may operate the base station only when in the presence of, and under the direct supervision of, a holder.

"Restricted permits are issued upon application by the nearest FCC District Office, and no examination is required. However, applicants must certify that they need the permit, can receive and transmit spoken English, can keep a rough written log in English or other language in general use, are familiar with FCC regulations concerning the authority granted by the permit, and understand that they are responsible for keeping familiar with all current FCC regulations concerning the permit."

The permit form, sized to fit conveniently into the billfold, must be carried by the PCO licensee whenever he operates the base station.

Operators of the mobile units do not need FCC permits, however. A mobile operator needs only the permission of the licensee to operate the equipment. Yet several manufacturers suggest it's a good idea for the PCO to issue his own permits to mobile operators, in order to keep close control over his radio system.

What about the radio log? Several PCOs interviewed claim the "logging" chore is one of the most discouraging aspects in the use of two-way radio communication. The FCC requires all base stations or combinations licensed as base stations to maintain complete logs relating to their operation. Mobile units are not required to keep separate logs, but all records pertaining to the mobile units must be kept at a central station.

According to Page, the following information must be recorded in the log:

1. The date and time the station is on the air each day.

2. The signature (not just initials) of the operator and the time period on duty.

3. The call letters of other base stations contacted, and the date, time, and approximate length of conversation. It is not necessary to "log" calls to and from mo-

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Contains DDVP and PERTHANE

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bile units, except in certain instances.

4. Tower lighting information. If the station has a lighted tower, someone must check the tower lights each evening to make sure they are lighted. A log entry should be made showing the time and date tower lights are checked. If the lights should fail, an entry in the log must be made of this fact. In addition, if the tower is equipped with a flashing beacon, and the beacon should fail, the Civil Aeronautics Authority must be notified immediately by telephone if the light is out more than 30 minutes. The CAA is then notified again when the beacon is repaired. Log entries should also be made of these notifications.

"Other entries, pertaining to frequency, power, etc., must be made in the station record by the FCC-licensed service engineer," Page said. "The log containing this information should be kept at the main station for inspection by FCC representatives.

"Corrections of these logs should never be made by erasing the incorrect entry. Incorrect information must be lined out, initialed, and dated, and the correction written in just above the original entry. And corrections of entries should be made only by the person originally making the entry."

Two-Way Telephones

For the operator who doesn't want to go into the expense and "red tape" involved in two-way radio communication, PCO Lewis of Muncie, Ind., suggests two-way telephones.

"In most areas of the country," he explains, "telephone systems have a set-up whereby you can have a private line installed to your office, connecting you with the telephone company. The company, in turn, then connects you with the telephone-equipped vehicle.

"However, this system has some drawbacks. For one thing, you have a sharply limited number of calls that can be made in a month without paying extra fees. Also, anytime you would be in a neighboring town that would require long distance charges by phone, there would also be long distance charges with this private line."

3 Telephone Systems

Bell Telephone Co. breaks its main two-way service down into three broad categories: "general," "dispatching," and "signaling only," service. General service consists of two-way telephone service between a mobile telephone and any regular wire telephone, or between two mobile telephones. With this service, any call to or from a mobile telephone is completed by a telephone company mobile service operator.

The dispatching service offers two-way telephone service to the dispatcher's telephone - equipped vehicles. It differs from general service primarily in that the dispatcher has a direct line to the mobile service operator to save time in placing calls. Since the mobile service operator completes each call, the dispatcher can also call other mobile units and his mobile units can place calls to other regular wire telephones.

The signaling only service is not

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two-way communication, but provides a signal in the phone-equipped vehicle. By pre-arrangement, the serviceman would then call his office from a wire telephone.

A fourth service, just now becoming available, is a modified form of the dispatching service. In this case, the connection between the dispatch telephone and the phone-equipped vehicle is made automatically without the aid of a mobile service operator. This is called "direct" or "special direct dispatch service."

"General mobile telephone, dispatching, and signaling only service are now available in about 300 areas in the U. S.," according to M. P. Cosgrove, public relations manager of American Telephone & Telegraph Co. "These include the metropolitan areas surrounding nearly all the cities in the country with a population of 100,000 or more. At the moment, direct dispatch service is available only in Cleveland, Detroit, and Baltimore, but it will gradually be expanded to many other areas in the future."

Cosgrove told PC the small number of radio channels available to telephone companies makes it necessary for telephone companies to operate on a party-line basis. He added, however, that selective ringing is used so calls are directed only to the car for which they are intended.

This way, each car has its own telephone number. If a call comes in while a driver is away and he doesn't hear the bell ring, he will find a "call' lamp near the telephone handset turned on. Direct dispatching service differs to the extent that all cars in a dispatcher's fleet are signalled simultaneously and the dispatcher identifies the car he wishes by voice. Since all cars in the fleet are signalled each time, there is no call lamp installed in this case.

The typical mobile telephone equipment consists of a 12x20x6-inch transmitter mounted in the trunk, an aerial mounted on the fender or roof, and a telephone handset mounted on or near the dashboard. This equipment can be installed by the telephone company in about one-half a day.

"Three frequency bands are available for mobile telephone service," Cosgrove said. "These are 30-40 megacycle, 150-160 megacycle, and 450-460 megacycle bands. Some areas have service on all three and others on only one or two of the three. Frequency assignment for a particular customer is arranged between the customer and the telephone company engineer on the basis of the customer's needs and the available channels."

Confronted by resistance and a generally tight industry pricing structure, the PCO today must pare his costs wherever possible, if he wants to keep out of the red. For that reason, office-to-vehicle communication—whether it's by radio or telephone—may be an economic necessity for some operators. According to one two-way radio manufacturer, a PCO buying a unit on a 3- to 5-year plan can expect to pay only about $1.25 per working day for this service after installation, based on a 22-day working month. That expense could easily be absorbed through the elimination of backtracking alone. Why not investigate two-way communication? It may help you sell, and save.

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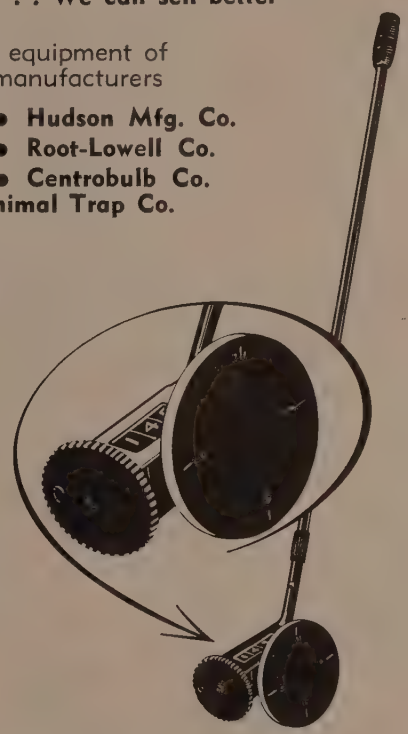

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1959

PCO *Equipment* DIRECTORY

MAIN DIVISIONS

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Area Fly & Mosquito Control Pg. 38
Termite Control ..... Pg. 38
Fumigation ..... Pg. 42
Rodent Control ..... Pg. 48
Bird Control ..... Pg. 49
Safety ..... Pg. 50

In this—PC's second Annual Equipment Directory—all supplier listings have been updated and new categories added. So be certain you lay aside last year's directory and use this one. If you see an omission here—either equipment category or supplier—let us know so we can make our next index ever more complete. This directory is the only one of its kind compiled exclusively for the pest control industry. Suppliers in bold face have ads in this issue.

GENERAL PEST CONTROL

AEROSOLS: Industrial

B. T. Babbitt Co., 625 Madison Ave., New York, N. Y.
Continental Chemiste Corp., 2256 W. Ogden Ave., Chicago, Ill.
Hub States Chemical & Equipment Co., 1255 N. Windsor St., Indianapolis, Ind.
Neil A. Maclean Co., 9846 E. Alpaca St., El Monte, Calif.; 1536 Industrial Way, Belmont, Calif.
Orb Industries, Wallingford Rd., Media, Pa.
Residex Corp., 1500 W. Elizabeth Ave., Linden, N. J.
Sprayway, Inc., 7644 Vincennes Ave., Chicago, Ill.
Virginia Smelting Co., West Norfolk, Va.
Whitmire Research Laboratories, 339 S. Vandeventer Ave., St. Louis, Mo.

AEROSOL DISPENSERS: Automatically Timed

Huntington Laboratories, Huntington, Ind.
Syncro-Mist Controls, Inc., 270 Madison Ave., New York, N. Y.

BOTTLES: Plastic

American Agile Corp., Bedford, O.
B & G Co., Plumsteadville, Pa.; 2640 Myrtle Springs Rd., Dallas, Tex.
Banta Hi-Fog Co., 812 Truckway, Montebello, Calif.
Bradley Container Corp., Maynard, Mass.
Continental Can Co., 100 E. 42nd St., New York, N. Y.
Hub States Chemical & Equipment Co., 1255 N. Windsor St., Indianapolis, Ind.
Imco Container Corp., 75th and Cleveland, Kansas City, Mo.
Neil A. Maclean Co., 9846 E. Alpaca St., El Monte, Calif.; 1536 Industrial Way, Belmont, Calif.
Pest Control Equipment Co., 24 N. Bond St., Mount Vernon, N. Y.
Plax Corp., P.O. Box 1019, Hartford, Conn.
Royal Mfg. Co., Prescott, Ariz.
Southern Mill Creek Products Co., 1906 N. Armenia, Tampa, Fla.
York Chemical Co., 23 Dean St., Brooklyn, N. Y.

CARRYING CASES

B & G Co., Plumsteadville, Pa.; 2640 Myrtle Springs Rd., Dallas, Tex.
Durable Fibre Sample Case Co., 42 E. 20th St., New York, N. Y.
Hub States Chemical & Equipment Co., 1255 N. Windsor St., Indianapolis, Ind.
Neil A. Maclean Co., 9846 E. Alpaca St., El Monte, Calif.; 1536 Industrial Way, Belmont, Calif.
Pest Control Equipment Co., 24 N. Bond St., Mount Vernon, N. Y.
Pyrrole Chemical Corp., 817 Spring Lane, Portsmouth, O.
Southern Mill Creek Products Co., 1906 N. Armenia, Tampa, Fla.
York Chemical Co., 23 Dean St., Brooklyn, N. Y.

COMPRESSORS: Portable

Associated Sales & Supply Co., 5137 Southwest Ave., St. Louis, Mo.
B & G Co., Plumsteadville, Pa.; 2640 Myrtle Springs Rd., Dallas, Tex.
Banta Hi-Fog Co., 812 Truckway, Montebello, Calif.
Campbell-Hausfeld Co., Harrison, O.
Chicago Pneumatic Tool Co., 8 E. 44th St., New York, N. Y.
DeVilbiss Co., 296 Phillips Ave., Toledo, O.
Hub States Chemical & Equipment Co., 1255 N. Windsor St., Indianapolis, Ind.
Ingersoll-Rand Co., 11 Broadway, New York, N. Y.
Jaeger Machine Co., 550 W. Spring, Columbus, O.
Neil A. Maclean Co., 9846 E. Alpaca St., El Monte, Calif.; 1536 Industrial Way, Belmont, Calif.
Schramm, Inc., West Chester, Pa.
Gordon Smith & Co., 453 College St., Bowling Green, Ky.
Southern Mill Creek Products Co., 1906 N. Armenia, Tampa, Fla.
Tokheim Corp., General Products Div., 1680 Wabash Ave., Ft. Wayne, Ind.
York Chemical Co., 23 Dean St., Brooklyn, N. Y.

DEODORIZERS: Electric

Associated Products, Inc., Glenshaw, Pa.
Allied Block Chemical Co., Fifth & Bingham St., Pittsburgh, Pa.
B & G Co., Plumsteadville, Pa.; 2640 Myrtle Springs Rd., Dallas, Tex.
Hub States Chemical & Equipment Co., 1255 N. Windsor St., Indianapolis, Ind.
H. D. Hudson Mfg. Co., Inc., 589 E. Illinois St., Chicago, Ill.
Scent-Flo Distributing Co., 7227 Hamilton Ave., Pittsburgh, Pa.
Southern Mill Creek Products Co., 1906 N. Armenia, Tampa, Fla.
Syncro-Mist Controls, Inc., 270 Madison Ave., New York, N. Y.
York Chemical Co., 23 Dean St., Brooklyn, N. Y.

DISPLAY MODELS: Insect

Chemical Control Co., 2602 Indian Trail Blvd., Traverse City, Mich.
Insect Model Co., 410 Ogden Ave., Fairmont, W. Va.
Turtox Biological Supply Co., 8200 S. Hoyne Ave., Chicago, Ill.

SAVE 30%
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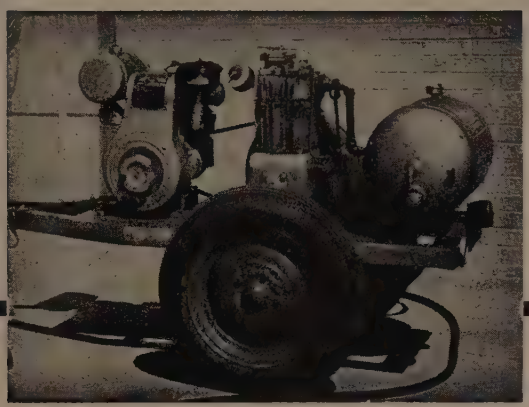

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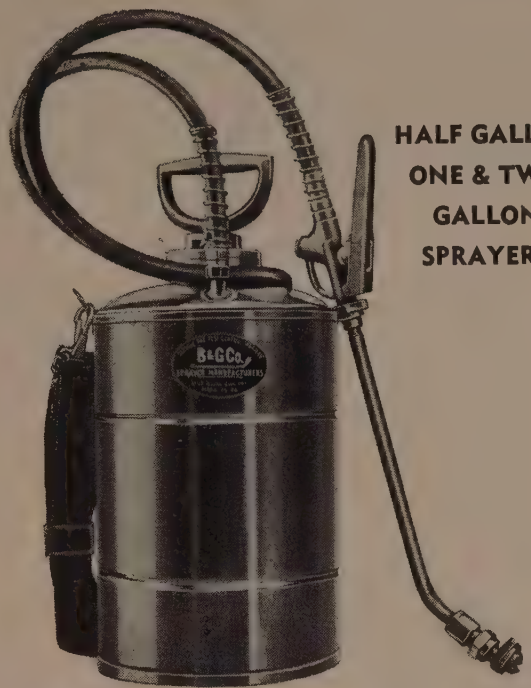

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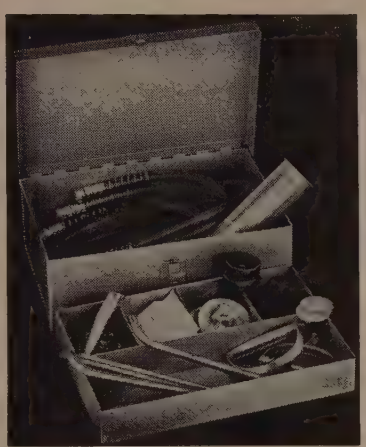

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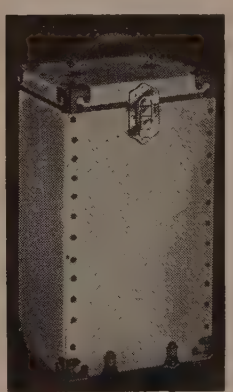

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DUSTERS: Bulb

Associated Sales & Supply Co., 5137 Southwest Ave., St. Louis, Mo.
Central Rubber Products Co., 821 Broadway, New York, N. Y.
Idico Products Co., 18 W. 125th St., New York, N. Y.
Hub States Chemical & Equipment Co., 1255 N. Windsor St., Indianapolis, Ind.
Neil A. Maclean Co., 9846 E. Alpaca St., El Monte, Calif.; 1536 Industrial Way, Belmont, Calif.
Pest Control Equipment Co., 24 N. Bond St., Mount Vernon, N. Y.
Public Health Equipment & Supply Co., 1720 S. Presa St., San Antonio, Tex.
York Chemical Co., 23 Dean St., Brooklyn, N. Y.

DUSTERS: Portable

Banta Hi-Fog Co., 812 Truckway, Montebello, Calif.
John Bean Div., FMC, 1305 S. Cedar St., Lansing, Mich.
E. C. Brown Co., Canandaigua, N. Y.
R. E. Chapin Mfg. Works, Batavia, N. Y.
Dobbins Div., Chamberlain Corp., Waterloo, Ia.
Hub States Chemical & Equipment Co., 1255 N. Windsor St., Indianapolis, Ind.
H. D. Hudson Mfg. Co., Inc., 589 E. Illinois St., Chicago, Ill.
Neil A. Maclean Co., 9846 E. Alpaca St., El Monte, Calif.; 1536 Industrial Way, Belmont, Calif.
Niagara Chemical Div., FMC, Middleport, N. Y.
Pest Control Equipment Co., 24 N. Bond St., Mount Vernon, N. Y.
Public Health Equipment & Supply Co. 1720 S. Presa St., San Antonio, Tex.
Root-Lowell Corp., 445 N. Lake Shore Drive, Chicago, Ill.
D. B. Smith & Co., 414 Main St., Utica, N. Y.
Southern Mill Creek Products Co., 1906 N. Armenia, Tampa, Fla.
York Chemical Co., 23 Dean St., Brooklyn, N. Y.

DUSTERS: Power

Banta Hi-Fog Co., 812 Truckway, Montebello, Calif.
John Bean Div., FMC, 1305 S. Cedar St., Lansing, Mich.
Buffalo Turbine Agricultural Equipment Co., 70 Industrial St., Gowanda, N. Y.
Friend Mfg. Co., Gasport, N. Y.
Hardie Mfg. Co., 730 S. Main St., Wilkes-Barre, Pa.
Hub States Chemical & Equipment Co., 1255 N. Windsor St., Indianapolis, Ind.
H. D. Hudson Mfg. Co., Inc., 589 E. Illinois St., Chicago, Ill.
F. E. Myers & Bro. Co., 249 Orange St., Ashland, O.
Public Health Equipment & Supply Co., 1720 S. Presa St., San Antonio, Tex.
Root-Lowell Corp., 445 N. Lake Shore Drive, Chicago, Ill.
Southern Mill Creek Products Co., 1906 N. Armenia, Tampa, Fla.
York Chemical Co., 23 Dean St., Brooklyn, N. Y.

DUSTERS: Small, Puffer-Type

Associated Sales & Supply Co., 5137 Southwest Ave., St. Louis, Mo.
Central Rubber Products Co., 821 Broadway New York, N. Y.
Champion Sprayer Co., 6509 Heintz Ave., Detroit, Mich.
R. E. Chapin Mfg. Works, Inc., 29 Liberty St., Batavia, N. Y.
Getz Exterminators, Inc., 2234 Olive St., St. Louis, Mo.
Hub States Chemical & Equipment Co., 1255 N. Windsor St., Indianapolis, Ind.
H. D. Hudson Mfg. Co., Inc., 589 E. Illinois St., Chicago, Ill.
Neil A. Maclean Co., 9846 E. Alpaca St., El Monte, Calif.; 1536 Industrial Way, Belmont, Calif.
Orkin Exterminating Co., Inc., 713 W. Peachtree St., Atlanta, Ga.
Public Health Equipment & Supply Co., 1720 S. Presa St., San Antonio, Tex.
Pyrrole Chemical Corp., 817 Spring Lane, Portsmouth, O.
Root-Lowell Corp., 445 N. Lake Shore Drive, Chicago, Ill.
D. B. Smith & Co., Inc., 414 Main St., Utica, N. Y.
Southern Mill Creek Products Co., 1906 N. Armenia, Tampa, Fla.

ELECTROCUTING SCREENS

Detjen Corp., Skidmore Road, Pleasant Valley, N. Y.
Electro-Lads Mfg. Co., Box 2262, Dearborn, Mich.
Gardner Mfg. Co., 2740 Barstow St., Horicon, Wisc.

HOSE: Chemical Resistant

Associated Sales & Supply Co., 5137 Southwest Ave., St. Louis, Mo.
B & G Co., Plumsteadville, Pa.; 2640 Myrtle Springs Rd., Dallas, Tex.
Broadway Rubber Corp., 529 E. Broadway, Louisville, Ky.
Cincinnati Rubber Mfg. Co., 4900 Franklin Ave., Cincinnati, O.
Essick Mfg. Co., 1950 Santa Fe Ave., Los Angeles, Calif.
Ewing Mfg. Co., P.O. Box 1986, Jackson, Miss.
B. F. Goodrich Industrial Products Co., 448 S. Main St., Akron, O.
Goodyear Industrial Products Co., Inc., 16 Murray St., New York, N. Y.
Goodyear Tire & Rubber Co., 1144 E. Market St., Akron, O.
Hardie Mfg. Co., 730 S. Main St., Wilkes-Barre, Pa.
Hub States Chemical & Equipment Co., 1255 N. Windsor St., Indianapolis, Ind.
H. D. Hudson Mfg. Co., Inc., 589 E. Illinois St., Chicago, Ill.
Neil A. Maclean Co., 9846 E. Alpaca St., El Monte, Calif.; 1536 Industrial Way, Belmont, Calif.
Pyrrole Chemical Corp., 817 Spring Lane, Portsmouth, O.
Quaker Rubber Div., Tacony & Comly Sts., Philadelphia, Pa.
Southern Mill Creek Products Co., 1906 N. Armenia, Tampa, Fla.

LENSES: Hand

American Optical Co., 95 Mechanic St., Southbridge, Mass.
Bausch & Lomb Optical Co., 626 St. Paul St., Rochester, N. Y.
Bayes Mfg. Co., 28 Irving Place, New York, N. Y.
Buhl Optical Co., 1009 Beech Ave., Pittsburgh, Pa.
Hub States Chemical & Equipment Co., 1255 N. Windsor St., Indianapolis, Ind.
Neil A. Maclean Co., 9846 E. Alpaca St., El Monte, Calif.; 1536 Industrial Way, Belmont, Calif.
New York Scientific Supply Co., 30 W. 30th St., New York, N. Y.
Pest Control Equipment Co., 24 N. Bond St., Mount Vernon, N. Y.
Carl Zeiss, Inc., 485 Fifth Ave., New York, N. Y.

MICROSCOPES

American Optical Co., 95 Mechanic St., Southbridge, Mass.
Bausch & Lomb Optical Co., 626 St. Paul St., Rochester, N. Y.
Buhl Optical Co., 1009 Beech Ave., Pittsburgh, Pa.
Hub States Chemical & Equipment Co., 1255 N. Windsor St., Indianapolis, Ind.
New York Scientific Supply Co., 30 W. 30th St., New York, N. Y.
Pest Control Equipment Co., 24 N. Bond St., Mount Vernon, N. Y.
Testa Mfg. Co., 10122 E. Rush St., El Monte, Calif.
U. S. Scientific Supply Co., 1392 Flatbush Ave., Brooklyn, N. Y.
Carl Zeiss, Inc., 485 Fifth Ave., New York, N. Y.

MIXERS: Pesticide Formulating

Cleveland Mixer Co., Box 197, Bedford, O.
Colonial Products, Inc., 6207 Georgia Ave., West Palm Beach, Fla.
J. H. Day Co., 4932 Beech St., Cincinnati, O.
Eastern Industries, Inc., 100 Skiff St., Hamden, Conn.
Mix Mor, Inc., 3139 Casitas Ave., Los Angeles, Calif.
New England Tank & Tower Co., 85 Tileston St., Everett, Mass.

(This listing continued on page 30)

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plus

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These are actual savings on comparable PCO items . . . a dollars-savings of 24%! And Hub States paid the entire freight bill (on every order over $45, chemicals and equipment combined).

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CHEMICALS and EQUIPMENT

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with

Dyna-Fog*
TRADE-MARK

INSECTICIDAL FOGGING GENERATORS

Dyna-Fog units disperse insecticides so effectively that needless waste of formulas is eliminated. You cover more area with less formulation.

Dyna-Fog Jr. Weighs only 19 pounds — the Dyna-Fog Jr. is designed for portability — yet its output beats anything in its class. Equipped with automatic formulation shut-off valve. Only one moving part. Nothing to lubricate. Adjustable insecticidal atomization from 0.5 to 50 microns — up to 15 gallons per hour. Only **$299.50**

F.O.B. Westfield, Indiana

Dyna-Fog Mr. Versatility in application has made Dyna-Fog Mr. popular among professional pest control services. The Dyna-Fog Mr. can be used for spraying and wetting mists in the application of insecticides, larvicides, fungicides, disinfectants, deodorants and repellents. By changing to oil base formulations, it can be used for fogging. Sufficient tank capacity for a complete job. Adjustable output. No hand pumping. Shipped complete with back pack tanks. Only **$359.50**

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Curtis Automotive Devices, Inc.
Dyna Products Division
P. O. Box 297-A **Westfield, Indiana**

MIXERS: Pesticide Formulating (Cont'd.)

Rapids Machinery Co., Marion, Ia.
Charles Ross & Son Co., 82 Emerson Place, Brooklyn, N. Y.

NOZZLES

Accessories Mfg. Co., 301 Admiral, Kansas City, Mo.
Associated Sales & Supply Co., 5137 Southwest Ave., St. Louis, Mo.
B & G Co., Plumsteadville, Pa.; 2640 Myrtle Springs Rd., Dallas, Tex.
Banta Hi-Fog Co., 812 Truckway, Montebello, Calif.
John Bean Div., FMC, 1305 S. Cedar St., Lansing, Mich.
Bete Fog Nozzle, Inc., 309 Wells St., Greenfield, Mass.
Blackwell Burner Co., 5033 W. Commerce St., San Antonio, Tex.
Champion Sprayer Co., 6509 Heintz Ave., Detroit, Mich.
Cooley Spray Equipment Works, Springfield Rd., Somers, Conn.
Essick Mfg. Co., 1950 Santa Fe Ave., Los Angeles, Calif.
Ewing Mfg. Co., P.O. Box 1986, Jackson, Miss.
Friend Mfg. Co., Gasport, N. Y.
Hardie Mfg. Co., 730 N. Main St., Wilkes-Barre, Pa.
Hub States Chemical & Equipment Co., 1255 N. Windsor St., Indianapolis, Ind.
H. D. Hudson Mfg. Co., Inc., 589 E. Illinois St., Chicago, Ill.
Neil A. Maclean Co., 9846 E. Alpaca St., El Monte, Calif.; 1536 Industrial Way, Belmont, Calif.
Monarch Mfg. Works, Inc., 2051 E. Ontario St., Philadelphia, Pa.
F. E. Myers & Bro. Co., 249 Orange St., Ashland, O.
Pest Control Equipment Co., 24 N. Bond St., Mount Vernon, N. Y.
Pyrrole Chemical Corp., 817 Spring Lane, Portsmouth, O.
Root-Lowell Corp., 445 N. Lake Shore Drive, Chicago, Ill.
D. B. Smith & Co., 414 Main St., Utica, N. Y.
Southern Mill Creek Products Co., 1906 N. Armenia, Tampa, Fla.
Spraying Systems Co., 3201 W. Randolph St., Bellwood, Ill.
Tryco Mfg. Co., Inc., 1600 N. Calhoun, Decatur, Ill.
W. A. Westgate, P.O. Box 445, Davis, Calif.
York Chemical Co., 23 Dean St., Brooklyn, N. Y.

NOZZLES: Extension

Associated Sales & Supply Co., 5137 Southwest Ave., St. Louis, Mo.
B & G Co., Plumsteadville, Pa.; 2640 Myrtle Springs Rd., Dallas, Tex.
John Bean Div., FMC, 1305 S. Cedar St., Lansing, Mich.
Blackwell Burner Co., 5033 W. Commerce St., San Antonio, Tex.
Champion Sprayer Co., 6509 Heintz Ave., Detroit, Mich.
Dobbins Div., Chamberlain Corp., Waterloo, Ia.
Essick Mfg. Co., 1950 Santa Fe Ave., Los Angeles, Calif.
Ewing Mfg. Co., P. O. Box 1986, Jackson, Miss.
Hub States Chemical & Equipment Co., 1255 N. Windsor St., Indianapolis, Ind.
H. D. Hudson Mfg. Co., Inc., 589 E. Illinois St., Chicago, Ill.
Neil A. Maclean Co., 9846 E. Alpaca St., El Monte, Calif.; 1536 Industrial Way, Belmont, Calif.
Pest Control Equipment Co., 24 N. Bond St. Mount Vernon, N. Y.
Pyrrole Chemical Corp., 817 Spring Lane, Portsmouth, O.
Root-Lowell Corp., 445 N. Lake Shore Drive, Chicago, Ill.
D. B. Smith & Co., Inc. 414 Main St., Utica, N. Y.
Southern Mill Creek Products Co., 1906 N. Armenia, Tampa, Fla.
Spraying Systems Co., 3201 W. Randolph St., Bellwood, Ill.
Tryco Mfg. Co., Inc., 1600 N. Calhoun, Decatur, Ill.
York Chemical Co., 23 Dean St., Brooklyn, N. Y.

PUMPS

Ace Pump Corp., 140 Hernando St., Memphis, Tenn.
Associated Sales & Supply Co., 5137 Southwest Ave. St. Louis, Mo.

(This listing continued on page 32)

Super formula kills more flies, other insects instantly

FREE
SPRAY HANDLE WITH EACH DOZEN

- I.A.I. or D.A.I. furnished in ¾-lb. or 1-lb. aerosols, packed twelve per carton with **FREE SPRAY HANDLE.**
- 3-lb. high pressure aerosols with "Soft Touch" control valve, packed in individual shipping cartons without spray handle.

- Over 4 times the kill power of home-type aerosols! I.A.I. contains .500% pyrethrins; 4.000% piperonyl butoxide.
- Each pound of super-strength concentrate treats more than a quarter million cubic feet of space!
- Safety-approved for use where food is processed, served and stored. Meets I.C.C. safety standards.
- Super-strength formula stays airborne longer for maximum results with minimum fall-out over equipment and floors.
- No deposits, no valves or nozzles to buy with these disposable aerosols.

GUARANTEED 100% BY WHITMIRE WITH EITHER LABEL!

1. Choose Whitmire's nationally-known Disposable Aerosol Insecticide label, or . . .
2. I.A.I.—Your Private Brand Label. Labels are furnished FREE and Whitmire pays all freight on nominal shipments.

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MSA's complete line of safety equipment helps workers control pests safely, comfortably

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Protects the wearer while formulating, mixing or applying organic insecticides and other highly toxic pest controls. Full vision, complete facial protection. Gas-tight seal.

M-S-A HCN DETECTOR

Easy-to-use, accurate instrument "sniffs out" concentrations of HCN in any suspected area. Three squeezes of the aspirator bulb register amount of HCN in two minutes.

M-S-A HCN GAS MASK (type GMK)

Safeguards operators against Hydrocyanic Acid Gas in areas where enough air is present to support life. Complete range of individual canisters and masks available for all other vapors, dusts, fumes.

M-S-A DUSTFOE RESPIRATOR

Comfortable, lightweight breathing protection against dusts not significantly more toxic than lead. Streamlined design eliminates blind spots. Workers wear this one.

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CONTACT THE MSA MAN

MSA
SAFETY EQUIPMENT HEADQUARTERS

MINE SAFETY APPLIANCES COMPANY
201 North Braddock Avenue, Pittsburgh 8, Pa.
Member of National Pest Control Association

Every day — in many ways — MSA products safeguard millions of lives

PUMPS (Cont'd.)

B & G Co., Plumsteadville, Pa., 2640 Myrtle Springs Rd., Dallas, Tex.
Banta Hi-Fog Co., 812 Truckway, Montebello, Calif.
John Bean Div., FMC, 1305 S. Cedar St., Lansing, Mich.
Dobbins Div., Chamberlain Corp., Waterloo, Ia.
Essick Mfg. Co., 1950 Santa Fe Ave., Los Angeles, Calif.
Ewing Mfg. Co., P. O. Box 1986, Jackson, Miss.
Friend Mfg. Co., Gasport, N. Y.
Hardie Mfg. Co., 730 S. Main St., Wilkes-Barre, Pa.
Hub States Chemical & Equipment Co., 1255 N. Windsor St., Indianapolis, Ind.
H. D. Hudson Mfg. Co., Inc., 589 E. Illinois St., Chicago, Ill.
Hypro Engineering, Inc., 700 39th Ave., N.E., Minneapolis, Minn.
Ingersoll-Rand Co., 11 Broadway, New York, N. Y.
Neil A. Maclean Co., 9846 E. Alpaca St., El Monte, Calif.; 1536 Industrial Way, Belmont, Calif.
F. E. Myers & Bro. Co., 249 Orange St., Ashland, O.
Public Health Equipment & Supply Co., 1720 S. Presa St., San Antonio, Tex.
Pyrrole Chemical Corp., 817 Spring Lane, Portsmouth, O.
Root-Lowell Corp., 445 N. Lake Shore Drive, Chicago, Ill.
D. B. Smith & Co., Inc., 414 Main St., Utica, N. Y.
Southern Mill Creek Products Co., 1906 N. Armenia, Tampa, Fla.
Tryco Mfg. Co., Inc., 1600 N. Calhoun, Decatur, Ill.
Viking Pump Co., 4th and State, Cedar Falls, Ia.
York Chemical Co., 23 Dean St., Brooklyn, N. Y.

RADIOS: Mobile

General Electric Co., Electronics Park, Syracuse, N. Y.
Motorola Communications and Electronics, Inc., 4501 Augusta Blvd., Chicago, Ill.
Radio Corporation of America, Camden, N. J.

SAFETY EQUIPMENT

(See separate division, page 50)

SCALES

Detecto Scales, Inc., 540 Park Ave., Brooklyn, N. Y.
Howe Scale Co., 2951 Scale Ave., Rutland, Vt.
Neil A. Maclean Co., 9846 E. Alpaca St., El Monte, Calif.; 1536 Industrial Way, Belmont, Calif.
Toledo Scale Co., 1009 Telegraph Rd., Toledo, O.

SERVICE VEHICLES: Miscellaneous

Service Recorder Co., 1013Y Rockwell Ave., Cleveland, O.

SPRAYERS: Compressed Air

Associated Sales & Supply Co., 5137 Southwest Ave., St. Louis, Mo.
B & G Co., Plumsteadville, Pa., 2640 Myrtle Springs Rd., Dallas, Tex.
John Bean Div., FMC, 1305 S. Cedar St., Lansing, Mich.
Blackwell Burner Co., 5033 W. Commerce St., San Antonio, Tex.
E. C. Brown Co., Canandaigua, N. Y.
Campbell-Hausfeld Co., Harrison, O.
Champion Sprayer Co., 6523 Heintz Ave., Detroit, Mich.
R. E. Chapin Mfg. Works, Inc., 29 Liberty St., Batavia, N. Y.
DeVilbiss Co., 296 Phillips Ave., Toledo, O.
Dobbins Div., Chamberlain Corp., Waterloo, Ia.
H. D. Hudson Mfg. Co., Inc., 589 E. Illinois St., Chicago, Ill.
Hub States Chemical & Equipment Co. 1255 N. Windsor St., Indianapolis, Ind.
Lofstrand Co., Rockville, Md.
Neil A. Maclean Co., 9846 E. Alpaca St., El Monte, Calif.; 1536 Industrial Way, Belmont, Calif.
Pest Control Equipment Co., 24 N. Bond St., Mount Vernon, N. Y.
Public Health Equipment & Supply Co., 1720 S. Presa St., San Antonio, Tex.
Pyrrole Chemical Corp., 817 Spring Lane, Portsmouth, O.
Root-Lowell Corp., 445 N. Lake Shore Drive, Chicago, Ill.

(This listing continued on page 34)

Complete Unit - Model No. 1536

Look!!

ANNOUNCING:

NAMCO

SPRAYERS and PISTOLS

Highest Quality
Materials
Workmanship
Performance

TANK AND PUMP FEATURES:

Heavy Gauge, Long-Lasting, Stainless Steel Tanks — Positive Locking Handle
Recessed Neck Flange Assures Complete Drainage — Flange & Riser Tube Silver Soldered
Full Floating Pump Leather for Easy Air Intake & Pumping
Stainless Steel Pump Rod in Deep Brass Guide

No. 1536 Complete Sprayer As Illustrated $35.50 Plus Postage

NO DRIP PISTOL

Precision Machined, Duraluminum Body
Smooth Trigger Action. "O" Ring Protected in Polished Sleeve for Minimum Wear and Dripless Service
Stainless Steel Valve Rod, Eliminates Corrosion
Designed for Polyethylene Tubing, Light, Durable & Completely Chemical Resistant
Finger-Tight Hose Fittings. No Wrenches Required to Change Hose

No. 1544 Pistol As Illustrated with 4-Way Multee Jet Nozzle-Strainer Assembly and 5 Foot Poly Tubing $15.00 Plus Postage

NEIL A. MACLEAN CO., INC.

P. O. BOX 853
BELMONT, CALIFORNIA

Quality Spraying Equipment

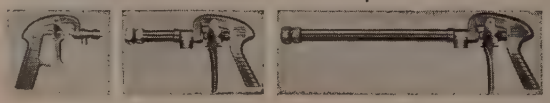
For more effective spraying... at lower chemical cost

Proper spray distribution, ample "reach" when you want it and dependable volume control contribute materially to effective coverage with minimum use of chemicals. These advantages are reliably yours with Spraying Systems equipment . . . proved through the years for quality design and better performance.

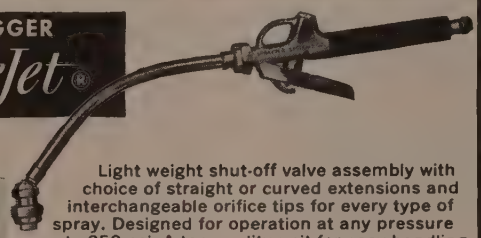
GunJet® No. 22-7676 for DRIP FREE SHUT-OFF

Shut-off needle extends through extension to valve seat placed immediately behind nozzle orifice. When you release the GunJet trigger, spray stops instantly; liquid in extension cannot drip out. No chemical waste. Supplied in 8", 18", 24" and 48" straight extensions. Complete choice of interchangeable orifice tips for flat, hollow cone, full cone and solid stream sprays in wide range of capacities. Note inlet location . . . only nozzle body, extension, cap and orifice tip touch chemicals . . . a design giving a quality, long wearing gun at minimum overall cost.

GUNJET SPRAY GUNS IN WIDE RANGE OF MODELS AND CAPACITIES FOR ALL PRESSURES UP TO 800 psi



TRIGGER TeeJet®



Light weight shut-off valve assembly with choice of straight or curved extensions and interchangeable orifice tips for every type of spray. Designed for operation at any pressure up to 250 psi. A top quality unit for easy handling and dependable service.

ADJUSTABLE TIPS—MulTeeJet Tip with four indexed positions for choice of flat and solid stream sprays. Adjustable ConeJet Tip for spray selection from solid stream to atomized cone.

Bottle Sprayers

Handy portable sprayers, equipped with quart plastic bottle, pneumatic atomizing nozzle and control valve. For spraying insecticides, sanitation chemicals and related uses.

Write for Bulletins 76, 87 and Data Sheet 7676

SPRAYING SYSTEMS CO.

3221 Randolph Street • Bellwood, Illinois

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D. B. Smith & Co., 414 Main St., Utica, N. Y.
Southern Mill Creek Products Co., 1906 N. Armenia, Tampa, Fla.
Spraying Systems Co., 3201 W. Randolph St., Bellwood, Ill.
Universal Metal Products Co., Saranac, Mich.
York Chemical Co., 23 Dean St., Brooklyn, N. Y.
Z & W Mfg. Corp., 30240 Lakeland Blvd., Wickliffe, O

SPRAYERS: Fogging or Misting

Aero-Master Co., 325 W. Pacific Ave., St. Louis, Mo.
Associated Sales & Supply Co., 5137 Southwest Ave., St. Louis, Mo.
B & G Co., Plumsteadville, Pa.; 2640 Myrtle Springs Rd., Dallas, Tex.
Banta Hi-Fog Co., 812 Truckway, Montebello, Calif.
John Bean Div., FMC, 1305 S. Cedar St., Lansing, Mich.
E. C. Brown Co., Canandaigua, N. Y.
Buffalo Turbine Agricultural Equipment Co., 70 Industrial St., Gowanda, N. Y.
Champion Sprayer Co., 6509 Heintz Ave., Detroit, Mich.
Curtis Automotive Devices, Inc., P. O. Box 297-A, Westfield, Ind.
A. B. Farquhar Co., 142 N. Duke St., York, Pa.
Friend Mfg. Co., Gasport, N. Y.
Gallo Mfg. Co., 1312 Forest St., Racine, Wisc.
Hardie Mfg. Co., 730 S. Main St., Wilkes-Barre, Pa.
Hartney Spray Corp., Dedham, Mass.
Hub States Chemical & Equipment Co., 1255 N. Windsor St., Indianapolis, Ind.
H. D. Hudson Mfg. Co., Inc., 589 E. Illinois St., Chicago, Ill.
Idico Products Co., 18 W. 125th St., New York, N. Y.
Neil A. Maclean Co., 9846 E. Alpaca St., El Monte, Calif.; 1536 Industrial Way, Belmont, Calif.
Oliver Corp., 400 W. Madison St., Chicago, Ill.
Pest Control Products Co., 6227 Santa Monica Blvd., Los Angeles, Calif.
Public Health Equipment & Supply Co., 1720 S. Presa St., San Antonio, Tex.
Pyrrole Chemical Corp., 817 Spring Lane, Portsmouth, O.
Scott Turbafog Co., Box 246, Auburn, Ind.
Silver Creek Precision Corp., Silver Creek, N. Y.
D. B. Smith & Co., Inc., 414 Main St., Utica, N. Y.
Southern Mill Creek Products Co., 1906 N. Armenia, Tampa, Fla.
Spraying Systems Co., 3201 W. Randolph St., Bellwood, Ill.
Todd Shipyards Corp., Columbia & Halleck Sts., Brooklyn, N. Y.
York Chemical Co., 23 Dean St., Brooklyn, N. Y.
Z & W Mfg. Corp., 30240 Lakeland Blvd., Wickliffe, O.

SPRAYERS: Hand

Associated Sales & Supply Co., 5137 Southwest Ave., St. Louis, Mo.
B & G Co., Plumsteadville, Pa.; 2640 Myrtle Springs Rd., Dallas, Tex.
John Bean Div., FMC, 1305 S. Cedar St., Lansing, Mich.
Blackwell Burner Co., 5033 W. Commerce St., San Antonio, Tex.
E. C. Brown Co., Canandaigua, N. Y.
Campbell-Hausfeld Co., Harrison, O.
Champion Sprayer Co., 6509 Heintz Ave., Detroit Mich.
R. E. Chapin Mfg. Works, Inc., 29 Liberty St., Batavia, N. Y.
Dobbins Div., Chamberlain Corp., Waterloo, Ia.
Hub States Chemical & Equipment Co., 1255 N. Windsor St., Indianapolis, Ind.
H. D. Hudson Mfg. Co., Inc., 589 E. Illinois St., Chicago, Ill.
Idico Products Co., 18 W. 125th St., New York, N. Y.
Lofstrand Co., Southlawn Lane, Rockville, Md.
Neil A. Maclean Co., 9846 E. Alpaca St., El Monte, Calif.; 1536 Industrial Way, Belmont, Calif.
Pest Control Equipment Co., 24 N. Bond St., Mount Vernon, N. Y.
Public Health Equipment & Supply Co., 1720 S. Presa St., San Antonio, Tex.
Pyrrole Chemical Corp., 817 Spring Lane, Portsmouth, O.
Root-Lowell Corp, 445 N. Lake Shore Drive., Chicago, Ill.

(This listing continued on page 36)

LETHALAIRE®

IS IDEAL FOR RESTAURANTS

- *Kills all flies quickly . . . even resistant ones*
- *Safe to use around food*
- *Economical*
- *Leaves no odor or oily film*

Lethalaire is the modern, convenient, economical way to control flying insects —it eliminates the need for expensive spray equipment and the nuisance of mixing old-fashioned, messy insecticides. It leaves no unpleasant odor, no oily film on tables, glasses, chinaware, etc.

Your hotel and restaurant customers will appreciate the advantages of the Lethalaire method of fly control. It kills quickly and efficiently, is safe to use wherever food is served or handled. It is exceptionally economical—a 5-lb. bomb is the equivalent of 10-12 gal. of ordinary fly spray.

For more satisfied customers and more profit to yourself, recommend the Lethalaire method of fly control. Order a supply of Lethalaire bombs today. There's a bomb for every size establishment—20-oz. bantam and 2½-lb. junior throwaways; 5-lb. and 30-lb. refillables.

Write Lethalaire Division
VIRGINIA SMELTING COMPANY
Box 172, West Norfolk, Va.

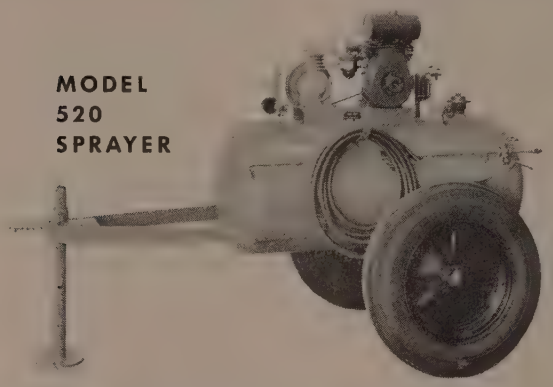
VIRGINIA® Chemicals

Available in Canada and many other countries

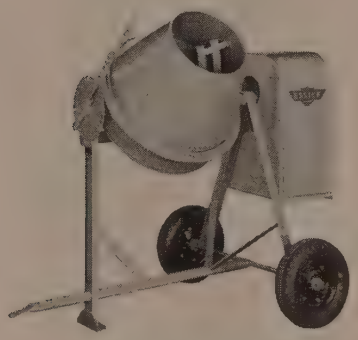
ESSICK EQUIPMENT

FOR A BETTER TERMITE CONTROL JOB

MODEL
520
SPRAYER



The only type sprayer where the chemical does not contact any moving part.



MODEL
350
GASOLINE
OR ELECTRIC
MIXER

This All Purpose Mixer will batch one full wheelbarrow of plaster mortar or concrete. The perfect mixer for termite control operators.

ESSICK MANUFACTURING COMPANY
1950 SANTA FE AVENUE
LOS ANGELES 21, CALIFORNIA • MAdison 9-3341

SPRAYERS: Hand (Cont'd.)

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Southern Mill Creek Products Co., 1906 N. Armenia, Tampa, Fla.
Spraying Systems Co., 3201 W. Randolph St., Bellwood, Ill.
Universal Metal Products Co., Saranac, Mich.
York Chemical Co., 23 Dean St., Brooklyn, N. Y.
Z & W Mfg. Corp., 30240 Lakeland Blvd., Wickliffe, O.

SPRAYERS: Power (electric or gas)

Associated Sales & Supply Co., 5137 Southwest Ave., St. Louis, Mo.
B & G Co., Plumsteadville, Pa.; 2640 Myrtle Springs Rd., Dallas, Tex.
Banta Hi-Fog Co., 812 Truckway, Montebello, Calif.
John Bean Div., FMC, 1305 S. Cedar St., Lansing, Mich.
Blackwell Burner Co., 5033 W. Commerce St., San Antonio, Tex.
E. C. Brown Co., Canandaigua, N. Y.
Buffalo Turbine Agricultural Equipment Co., 70 Industrial St., Gowanda, N. Y.
Campbell-Hausfeld Co., Harrison, O.
Champion Sprayer Co., 6509 Heintz Ave., Detroit, Mich.
Cooley Spray Equipment Works, Springfield Rd., Somers, Conn.
Curtis Automotive Devices, Inc., P. O. Box 297-A, Westfield, Ind.
Dobbins Div., Chamberlain Corp., Waterloo, Ia.
Essick Mfg. Co., 1950 Santa Fe Ave., Los Angeles, Calif.
Ewing Mfg. Co., P. O. Box 1986, Jackson, Miss.
A. B. Farquhar Co., 142 N. Duke St., York, Pa.
Friend Mfg. Co., Gasport, N. Y.
Hardie Mfg. Co., 730 S. Main St., Wilkes-Barre, Pa.
Hub States Chemical & Equipment Co., 1255 N. Windsor St., Indianapolis, Ind.
H. D. Hudson Mfg. Co., Inc., 589 E. Illinois St., Chicago, Ill.
Neil A. Maclean Co., 9846 E. Alpaca St., El Monte, Calif.; 1536 Industrial Way, Belmont, Calif.
F. E. Meyers & Bro. Co., 249 Orange St., Ashland, O.
Oliver Corp., 400 W. Madison St., Chicago, Ill.
Public Health Equipment & Supply Co., 1720 S. Presa St., San Antonio, Tex.
Root-Lowell Corp., 445 N. Lake Shore Drive, Chicago, Ill.
Silver Creek Precision Co., Silver Creek, N. Y.
D. B. Smith & Co., 414 Main St., Utica, N. Y.
Southern Mill Creek Products Co., 1906 N. Armenia, Tampa, Fla.
Strunk Power for Modern Living, Inc., Coatesville, Pa.
Texas Pump & Supply Co., P. O. Box 13225, Dallas, Tex.
Tryco Mfg. Co., Inc., 1600 N. Calhoun, Decatur, Ill.
Universal Metal Products Co., Saranac, Mich.
York Chemical Co., 23 Dean St., Brooklyn, N. Y.
Z & W Mfg. Corp., 30240 Lakeland Blvd., Wickliffe, O.

SPRAYERS: Steam

Banta Hi-Fog Co., 812 Truckway, Montebello, Calif.
John Bean Div., FMC, 1305 S. Cedar St., Lansing, Mich.
Neil A. Maclean Co., 9846 E. Alpaca St., El Monte, Calif.; 1536 Industrial Way, Belmont, Calif.
Madewell Products, Inc., 3129 E. 7th St., Oakland, Calif.
Public Health Equipment & Supply Co., 1720 S. Presa St., San Antonio, Tex.

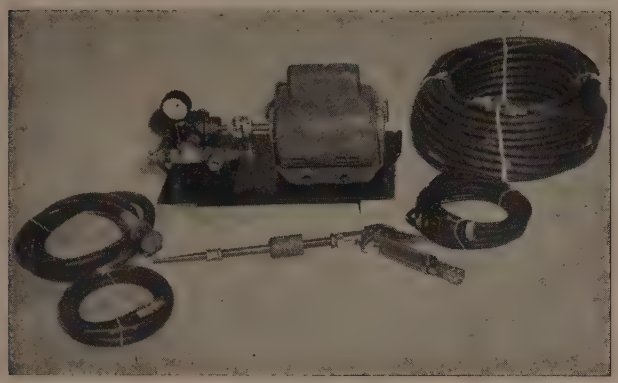
SPRAYERS: Water-Propelled

R. E. Chapin Mfg. Works, Inc., 29 Liberty St., Batavia, N. Y.
Hayes Spray Gun Co., 98 N. San Gabriel Blvd., Pasadena, Calif.
Pest Control Products Co., 6227 Santa Monica Blvd., Los Angeles, Calif.

UNIFORMS

Crown-Headlight Work Clothes, 3rd Plum & McFarland, Cincinnati, O.
Elin Mfg. Co., Dept. 526, Edmonton, Ky.
Hart Mfg. Co., 407 N. Grant, Columbus, O.
H. D. Lee Co., 117 W. 20th, Kansas City, Mo.
George Master Garment Co., Ligonier, Ind.
Riverside Mfg. Co., P. O. Box 30, Moultrie, Ga.

Our Specialty–Equipment for Termite Control Operators



T & P Unit #56
A leader for Termite Control. Capacity, 4 GPM Pressure up to 150# with Agitating Hose.

Unit #6500
For Weed and Tree Spraying and Termite Control, 1 or 2 outlets, Capacity 6 GPM. Pressure up to 250# with agitator.

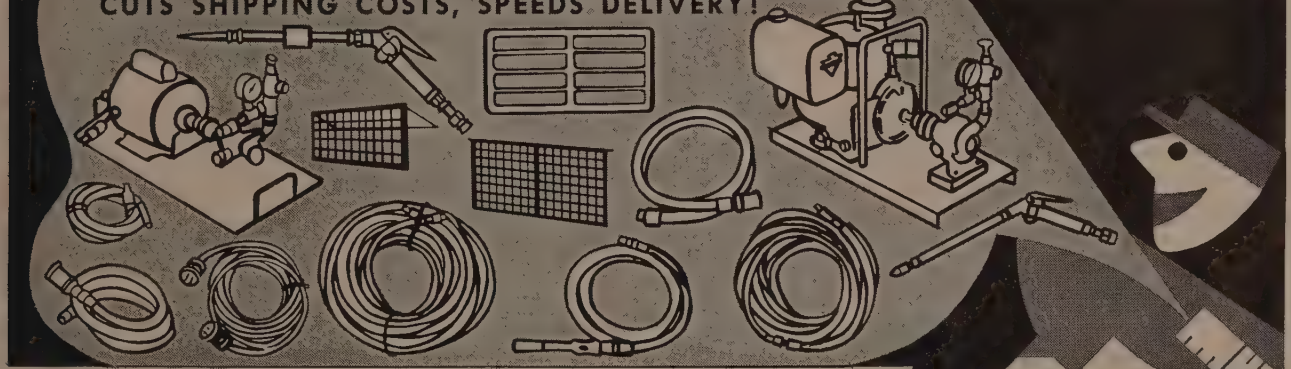
WE MANUFACTURE SIX DIFFERENT UNITS— All Are Tried and Proven and Engineered To Meet Your Requirements. State Purpose and Chemicals Used. Will Advise Fully

Check These Items Every Termite Operator Needs.

- ☐ Termite Hose
- ☐ Suction Hose
- ☐ Re-usable Hose Clamps
- ☐ Strainers
- ☐ Flow Guns
- ☐ Needle Points
- ☐ Adjustable Spray Nozzles
- ☐ Tee-Jet Sprayers
- ☐ Fine Stream Sprayers
- ☐ Portable Electric Hammers
- ☐ Portable Electric Drills
- ☐ Portable Electric Saws
- ☐ Masonry Bits
- ☐ Masonry Core Bits
- ☐ Hammer Bits
- ☐ Air Hammers and Tools

Make Associated Sales & Supply Your Headquarters for all Termite Control Needs

ONE STOP SERVICE SUPPLIES ALL YOUR NEEDS
CUTS SHIPPING COSTS, SPEEDS DELIVERY!



- COMPLETE LINE OF FOUNDATION VENTILATORS AND ACCESS DOORS
- PUMPS AND SPRAY EQUIPMENT

Associated Sales & Supply stocks everything you need in pump and spray equipment. Order from our complete line of pressure and portable models for termite control. The right equipment for the chemicals you use gets that job finished faster

Write* TODAY *for complete information and prices.

ASSOCIATED SALES & SUPPLY CO.
5137 SOUTHWEST AVE., ST. LOUIS 10, MO.

AS&S

VACUUM CLEANERS: Industrial

Black & Decker Mfg. Co., Towson, Md.
Clarke Floor Machine Co., 30 E. Clay Ave., Muskegon, Mich.
Doyle Vacuum Cleaner Co., 225 Stevens St., S.W., Grand Rapids, Mich.
Holt Mfg. Co., 669 20th St., Oakland, Calif.
Kent Co., Inc., 281 Canal St., Rome, N. Y.
Multi-Clean Products, Inc., 2277 Ford Parkway, St. Paul, Minn.
National Super Service Co., 1946 N. 13th St., Toledo, O.
Pullman Vacuum Cleaner Corp., 25 Buick St., Boston, Mass.
Spencer Turbine Co., 486 New Park Ave., Hartford, Conn.

VAPORIZERS: Electric

American Aerovap, Inc., 1125 University, Des Moines, Ia.
Hub States Chemical & Equipment Co., 1255 N. Windsor St., Indianapolis, Ind.
H. D. Hudson Mfg. Co., Inc., 589 E. Illinois St., Chicago, Ill.
Neil A. Maclean Co., 9846 E. Alpaca St., El Monte, Calif.; 1536 Industrial Way, Belmont, Calif.
Pest Control Products Co., 6227 Santa Monica Blvd., Los Angeles, Calif.
Southern Mill Creek Products Co., 1906 N. Armenia, Tampa, Fla.
Universal Electric Products Co., 4200 Sycamore Ave., Madison, Wisc.

AREA FLY & MOSQUITO CONTROL

DREDGES

Ellicott Machine Corp., 1611 Bush St., Baltimore, Md.
Schield Bantam Co., Park St., Waverly, Ia.

DUSTERS: Power

(See General Pest Control Division, page 28)

SPRAYERS: Fogging or Misting

(See General Pest Control Division, page 34)

SPRAYERS: Hand

(See General Pest Control Division, page 34)

SPRAYERS: Power (electric or gas)

(See General Pest Control Division, page 36)

TRAPS: Mosquito

Concession Supply Co., 3916 Secor Rd., Toledo, O.
Southern Mill Creek Products Co., 1906 N. Armenia, Tampa, Fla.

TERMITE CONTROL

BITS: Drill

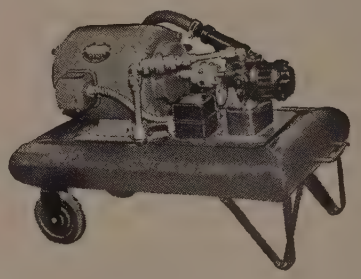
Associated Sales & Supply Co., 5137 Southwest Ave., St. Louis, Mo.
B & A Mfg. Co., 4415 Georgia Ave., West Palm Beach, Fla.
B & G Co., Plumsteadville, Pa.; 2640 Myrtle Springs Rd., Dallas, Tex.
Black & Decker Mfg. Co., Towson, Md.
Cincinnati Tool Co., 1990 Waverly Ave., Cincinnati, O.
Ewing Mfg. Co., P. O. Box 1986, Jackson, Miss.
Hub States Chemical & Equipment Co., 1255 N. Windsor St., Indianapolis, Ind.
Neil A. Maclean Co., 9846 E. Alpaca St., El Monte, Calif.; 1536 Industrial Way, Belmont, Calif.
Morse Twist Drill & Machine Co., Pleasant St., New Bedford, Mass.
New England Carbide Tool Co., Inc., 55 Commercial St., Medford, Mass.
Pest Control Equipment Co., 24 N. Bond St., Mount Vernon, N. Y.
Pyrrole Chemical Corp., 817 Spring Lane, Portsmouth, O.
Southern Mill Creek Products Co., 1906 N. Armenia, Tampa, Fla.

(This listing continued on page 40)

AUTOMATIC PRESHUR-MITE

Brought Back by Popular Demand

The Automatic PRESHUR-MITE Portable Termite Treating Unit faithfully served the Termite Control Industry almost 20 years. Was discontinued 4 years ago when the new unstable water based chemicals became so widely used. Recent improvements in these chemicals now make most of them suitable for application with the Automatic PRESHUR-MITE.



Make Your Next Termite Treating Unit

An Automatic PRESHUR-MITE . . . *You'll Be Glad You Did*

- **Heavy Duty** — Made for Rugged Use
- **Portable** — Weighs Approximately 127 lbs.
- **Pump Capacity** — 5 Gallons Per Minute
- **Adjustable** Pressure to 225 P.S.I.
- **Factory Set** to Operate at 125 P.S.I.
- **Fully Automatic** — Cuts on and off as Chemical Is Used
- **Electric Powered Only** — Operates on House Current
- **Designed for Use** with Any Type Solution Container
- **Comes Fully Equipped** Ready for Use — Nothing Extra to Buy
- **Handles Non-Abrasive Oil or Water Base Chemicals that Stay in Solution without Agitation**

Complete Line of Portable & Tank Models, Accessories and Tools

If you don't have a copy of our catalog No. 57, write for a Free Copy today.

EWING MANUFACTURING COMPANY

MAKERS OF HIGH QUALITY PEST CONTROL EQUIPMENT SINCE 1936

P. O. BOX 1986 JACKSON 5, MISSISSIPPI, U. S. A. PHONE FL-30343

MONEY-SAVING "EXCLUSIVES"!

PUBLIC HEALTH POWER DUSTER . . .

. . . This light weight unit is powered by a Clinton 1.6 HP gasoline engine. The duster weighs 33 pounds and has a dust tank capacity of 30 pounds. Because of its light weight and extreme maneuverability this unit reaches areas heretofore inaccessible. Fingertip throttle and flow control allow discharge of 30 pounds in three to thirty minutes.

$175 Net.

PUBLIC HEALTH SHOULDER DUSTER

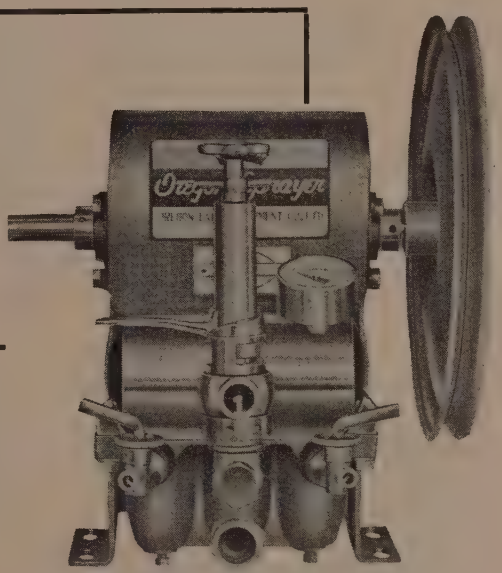
This is the quality crank duster. Brass construction with nickel chrome finish gives life-time service. Ten pound capacity with a 32-1 gear ratio with 360 degree fan housing rotation allows front or rear dusting. No clogging. Two body support adjustable straps gives carrying comfort.

$34.50 Net.

IMPROVED THREE CYLINDER PISTON SPRAYER

Seven and one half GPM at 500 PSI, with 1.5 HP drive! Non-corrosive, nickel chrome alloy, complete with 800 pound pressure gauge, 10 inch drive pulley, one inch suction hose with strainer, spray gun and hose coupler, tools and replacement parts. (also available in 20 and 30 GPM).

$135 Net. Supply limited.



REPRESENTATIVES OF: Agricultural Specialties • Blackwell Burner Co. • Buffalo Turbine Corp. • Chipman Chemical • Davison Chemical • Donoco, Incorporated Dow Chemical • Du Pont • Dyna Fog, Junior • Geigy Chemical • Hypro Nylon Roller Pumps • Lethalaire Products • Madewell Electro Products • S. B. Penick • Prentiss Drug & Chemical • Rohm & Haas • Shell Chemical D. B. Smith • Syntron Electric Hammer Co. • Tornado Blowers • Velsicol Corp. • Wil Mac Equipment Co.

PUBLIC HEALTH

All prices quoted are F.O.B. San Antonio, Texas, Terms net.

EQUIPMENT & SUPPLY COMPANY

1720 South Presa Street **San Antonio, Texas** **LEhigh 3-1141**

BITS: Drill (Cont'd.)

Rawlplug Co., Inc., 200 Petersville Rd., New Rochelle, N. Y.
Relton Corp., 99 N. Lotus Ave., Pasadena, Calif.
Tilden Tool Mfg. Co., 209 Los Molinos, San Clemente, Calif.
York Chemical Co., 23 Dean St., Brooklyn, N. Y.

COMPRESSORS

(See General Pest Control Division, page 26)

DOWELL PLUGS: Wooden

Eastern Research Corp., 15 S. 21st St., Philadelphia, Pa.
Superior Chemical Products, Inc., 47 N. Second St., Philadelphia, Pa.

DRILLS: Electric

Associated Sales & Supply Co., 5137 Southwest Ave., St. Louis, Mo.
B & G Co., Plumsteadville, Pa.; 2640 Myrtle Springs Rd., Dallas, Tex.
Black & Decker Mfg. Co., Towson, Md.
Ewing Mfg. Co., P. O. Box 1986, Jackson, Miss.
Hub States Chemical & Equipment Co., 1255 N. Windsor St., Indianapolis, Ind.
Ingersoll-Rand Co., 11 Broadway, New York, N. Y.
Neil A. Maclean Co., 9846 E. Alpaca St., El Monte, Calif.; 1536 Industrial Way, Belmont, Calif.
Millers Falls Co., Wells & Devon Sts., Greenfield, Mass.
Milwaukee Electric Tool Corp., 5316 W. State St., Milwaukee, Wisc.
Pest Control Equipment Co., 24 N. Bond St., Mount Vernon, N. Y.
Pyrrole Chemical Corp., 817 Spring Lane, Portsmouth, O.
Southern Mill Creek Products Co., 1906 N. Armenia, Tampa, Fla.
Stanley Electric Tools, 480 Myrtle St., New Britain, Conn.
Syntron Co., Homer City, Pa.
Thor Power Tool Co., 175 N. State St., Aurora, Ill.
York Chemical Co., 23 Dean St., Brooklyn, N. Y.

FUMIGATION SUPPLIES

(See Fumigation Division, page 42)

HAMMERS: Air

Associated Sales & Supply Co., 5137 Southwest Ave., St. Louis, Mo.
B & G Co., Plumsteadville, Pa.; 2640 Myrtle Springs Rd., Dallas, Tex.
Chicago Pneumatic Tool Co., 8 E. 44th St., New York, N. Y.
Jaeger Machine Co., 550 W. Spring, Columbus, O.
Schramm, Inc., West Chester, Pa.
Tokheim Corp., General Products Div., 1680 Wabash Ave., Ft. Wayne, Ind.

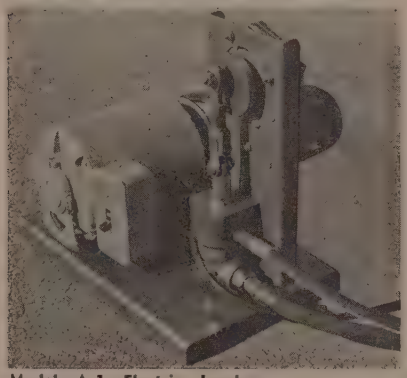
HAMMERS: Electric, Portable

Associated Sales & Supply Co., 5137 Southwest Ave., St. Louis, Mo.
B & G Co., Plumsteadville, Pa.; 2640 Myrtle Springs Rd., Dallas, Tex.
Black & Decker Mfg. Co., Towson, Md.
Chicago Pneumatic Tool Co., 8 E. 44th St., New York, N. Y.
Ewing Mfg. Co., P. O. Box 1986, Jackson, Miss.
Hub States Chemical & Equipment Co., 1255 N. Windsor St., Indianapolis, Ind.
Ingersoll-Rand Co., 11 Broadway, New York, N. Y.
Neil A. Maclean Co., 9846 E. Alpaca St., El Monte, Calif.; 1536 Industrial Way, Belmont, Calif.
Millers Falls Co., Wells & Devon Sts., Greenfield, Mass.
Pest Control Equipment Co., 24 N. Bond St., Mount Vernon, N. Y.
Public Health Equipment & Supply Co., 1720 S. Presa St., San Antonio, Tex.
Southern Mill Creek Products Co., 1906 N. Armenia, Tampa, Fla.

(This listing continued on page 42)

POWER LOADERS

There are two types of Power Loaders available to operators leasing Hi-Fog units. Each makes possible three minute loadings.



Model A-1 Electric Loader

Gasoline type Power Loader

Have You Tried BANTA HI-FOGS?

Less Than 50c per Day

Hi-Fogs, complete with power loader, may be leased for less than 50c per day. A complete consulting service by Trojan Labs, Entomologists, Plant Pathologists & Chemists, is included at no extra cost.

For More Details, Contact Your Local Distributor

TROJAN LABORATORIES
Box 326
Montebello, Calif.

B & G COMPANY
Plumsteadville,
Pennsylvania

Or Write

PUBLIC HEALTH EQUIP. & SUPPLY
Box 4143, Station A San Antonio, Texas

TROJAN LABORATORIES
Box 353 San Lorenzo, Calif.

Here Are Just A Few **HI-FOG** *Users*

Ray M. Dewey, President Dewey Pest Control Co. and formerly a Regional Vice-President of the PCO Assn. **has been a Hi-Fog User for nearly 15 years.**

He Owns 48!

Ray M. Dewey, Dewey Pest Control Co., Los Angeles:

"Hi-Fogs have many advantages: they are noiseless and cordless; insecticides may be used singly or in combination; either water or deobase oil may be used as a carrier. The Hi-Fog is a thoroughly 'Professional' unit that is not available at the local hardware, paint, or nursery store. We've used Hi-Fogs for nearly 15 years."

Edward Buchanan, with serviceman.

Edward Buchanan, Buchanan Laboratories, Duluth, Minn.:

"We are very pleased with these units. When properly handled and cared for, they have been trouble free. They have been a big saving for us because of the way insecticides can be applied so evenly, that 1 gallon is stretched beyond the normal limits of most sprayers. This even application is also a big factor in doing a workmanlike job, while getting the material where it does the most good.

"Hi-Fogs have a professional appearance, which means quite a bit to us and to our customers. The psychological impact of a professional-looking piece of equipment cannot be underrated.

"And parts orders for our Hi-Fog sprayers are returned, I'm sure, by the next mail. The Hi-Fog sprayers themselves, when shipped to Banta for overhaul after many months of service, are returned promptly and in almost new condition."

Headquarters for Bowyer & Hudson Exterminators in Los Angeles.

Harold V. Bowyer, Bowyer & Hudson Exterminators, Los Angeles:

"Banta Hi-Fog is one of the finest pieces of equipment for use by the pest control operator. And Banta Hi-Fog Co. offers a rental service at very minor cost with excellent maintenance service.

"We have been well satisfied and welcome the opportunity to recommend this service."

Edward M. Hill, Hill & Hill Exterminators, Inc., Houston, Tex.:

Edward M. Hill

"We have found the Banta Hi-Fog applicators to be a very versatile piece of equipment. We particularly enjoy the time saving and economy of its chemical usage features."

Buggsy Sturtevant, with vehicles, servicemen, Hi-Fogs.

Buggsy Sturtevant, Buggsy Sturtevant Pest Control, San Bernadino:

"We are now using several Hi-Fog units and have been for a number of years. We feel this is the most important piece of equipment we have for a thorough pest control service."

Wheeler Pest Control Hi-Fogs resistant roaches.

Otis E. Wheeler, Wheeler Pest Control, Bakersfield, Calif.:

"Our men prefer Hi-Fog units to all other equipment. Resistant roach control is easy with the Banta Hi-Fog."

BANTA HI-FOG COMPANY

812 Truckway **Montebello, Calif.**

Lee C. Truman, Pest Control Services, Inc., Indianapolis:

"We have been using 2 Hi-Fogs continuously for over 8 years. We use these machines anywhere that a fine mist spray is indicated, and find that by using concentrated materials, we can reduce our spraying time considerably."

HAMMERS: Electric, Portable (Cont'd.)

Stanley Electric Tool Div., 480 Myrtle Ave., New Britain, Conn.
Syntron Co., Homer City, Pa.
Thor Power Tool Co., 175 N. State St., Aurora, Ill.
Wodack Electric Tool Corp., 4627 W. Huron St., Chicago, Ill.
York Chemical Co., 23 Dean St., Brooklyn, N. Y.

HOSE: Chemical Resistant

(See General Pest Control Division, page 28)

LUMBER: Pressure-Treated

J. H. Baxter & Co., 3450 Wilshire Blvd., Los Angeles, Calif.; 120 Montgomery St., San Francisco, Calif.
Koppers Co., Inc., Koppers Bldg., Pittsburgh, Pa.
Essick Mfg. Co., 1950 Santa Fe Ave., Los Angeles, Calif.

PUMPS

(See General Pest Control Division, page 30)

SAWS: Electric, Portable

Associated Sales & Supply Co., 5137 Southwest Ave., St. Louis, Mo.
Black & Decker Mfg. Co., Towson, Md.
Ewing Mfg. Co., P.O. Box 1986, Jackson, Miss.
Hub States Chemical & Equipment Co., 1255 N. Windsor St., Indianapolis, Ind.
Mall Tool Co., 7728 S. Chicago Ave., Chicago, Ill.
Millers Falls Co., Wells & Devon Sts., Greenfield, Mass.
Milwaukee Electric Tool Corp., 5316 W. State St., Milwaukee, Wisc.
Skil Corp., 5043 Elston Ave., Chicago, Ill.
Stanley Electric Tool Div., 480 Myrtle Ave., New Britain, Conn.
Syntron Co., Homer City, Pa.
Thor Power Tool Co., 175 N. State St., Aurora, Ill.

SOIL INJECTORS

Associated Sales & Supply Co., 5137 Southwest Ave., St. Louis, Mo.
B & G Co., Plumsteadville, Pa., 2640 Myrtle Springs Rd., Dallas, Tex.
Banta Hi-Fog Co., 812 Truckway, Montebello, Calif.
Hub States Chemical & Equipment Co., 1255 N. Windsor St., Indianapolis, Ind.
Neil A. Maclean Co., 9846 E. Alpaca St., El Monte, Calif.; 1536 Industrial Way, Belmont, Calif.
Pest Control Equipment Co., 24 N. Bond St., Mount Vernon, N. Y.
Pyrrole Chemical Corp., 817 Spring Lane, Portsmouth, O.
Southern Mill Creek Products Co., 1906 N. Armenia, Tampa, Fla.
York Chemical Co., 23 Dean St., Brooklyn, N. Y.

SPRAYERS: Power (electric or gas)

(See General Pest Control Division, page 36)

VENTILATORS: Foundation

Associated Sales & Supply Co., 5137 Southwest Ave., St. Louis, Mo.
E. L. Bruce Co., 1700 Thomas, Memphis, Tenn.
Fasco Industries, Inc., Davis & Toppin, Rochester, N. Y.
Hub States Chemical & Equipment Co., 1255 N. Windsor St., Indianapolis, Ind.
Leigh Building Products, Coopersville, Mich.
Lite-A-Vent Corp., Box 9276, Tulsa, Okla.
Midget Louver Co., 6-8 Wall St., Norwalk, Conn.
Hub States Chemical & Equipment Co., 1255 N. Windsor St., Indianapolis, Ind.

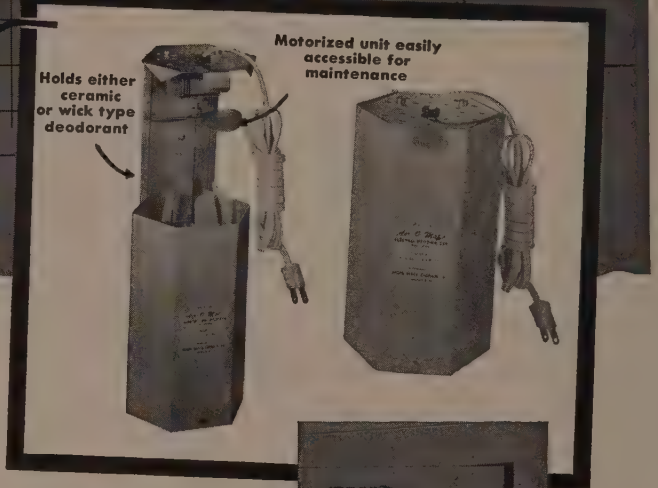
FUMIGATION

APPLICATORS

Neil A. Maclean Co., 9846 E. Alpaca St., El Monte, Calif.; 1536 Industrial Way, Belmont, Calif.
Southern Mill Creek Products Co., 1906 N. Armenia, Tampa, Fla.

(This listing continued on page 44)

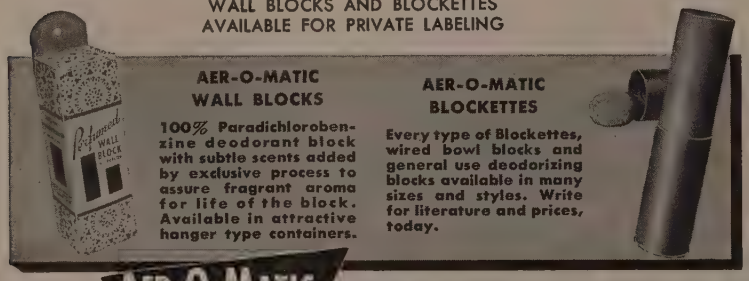
REPEAT SALES...
...build steady PROFITS!



NEW AER-O-MATIC ELECTRIC DEODORIZER

Create new sales and build steady refill repeat profits with this new electric deodorizer that opens completely for easy access, for maintenance and servicing. Cleans and refreshes the air silently, steadily, twenty-four hours a day. Scientifically developed neutralizing agent reaches every corner of the rest room.

WALL BLOCKS AND BLOCKETTES AVAILABLE FOR PRIVATE LABELING



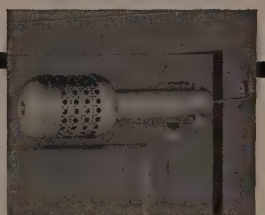
AER-O-MATIC WALL BLOCKS

100% Paradichlorobenzine deodorant block with subtle scents added by exclusive process to assure fragrant aroma for life of the block. Available in attractive hanger type containers.

AER-O-MATIC BLOCKETTES

Every type of Blockettes, wired bowl blocks and general use deodorizing blocks available in many sizes and styles. Write for literature and prices, today.

WRITE FOR FREE LITERATURE



AER-O-MATIC DOOR TYPE DEODORIZER

This low-priced, highly profitable automatic door type deodorizer perfumes the air every time the rest room door is opened or shut. Sturdy construction—requires no electricity or wires.

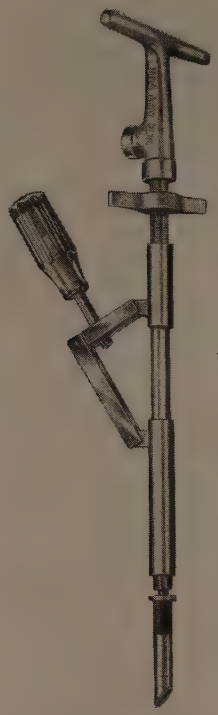
AER-O-MATIC Products

ALLIED BLOCK CHEMICAL COMPANY

Fifth & Bingham Streets • Pittsburgh 3, Pa.

NEW B & G SUB SLAB INJECTOR "SNAPS" INTO POSITION IN 2 SECONDS

1. Insert nozzle into hole drilled thru slab
2. Snap handle and expansion collar tightens automatically ... in 2 seconds you're ready



Now Better Than Ever, the new B & G injector assures high pressure soil injection without leakage. Saves you time . . . just set it and forget it! Tighten wing nut to position you prefer and unit is ready for action. B & G guarantees sealed delivery of liquids and gasses into soil beneath slabs or other solid barriers.

½" and ¾" Sizes complete with gun jet shut-off for accurate control of pressure injection . . . adjustable from full-open to full-shut position to eliminate costly waste.

CONVERT YOUR OLD INJECTOR!

Get the new B & G "Snap-tite" sleeve and adapt your present injector easily.

6.75

Sub-Slab Injector	**23.50**
with Gun Jet Shut-off	**30.75**
Gun Jet Shut-off with ¼" adapter & ¼" nipple	**7.50**

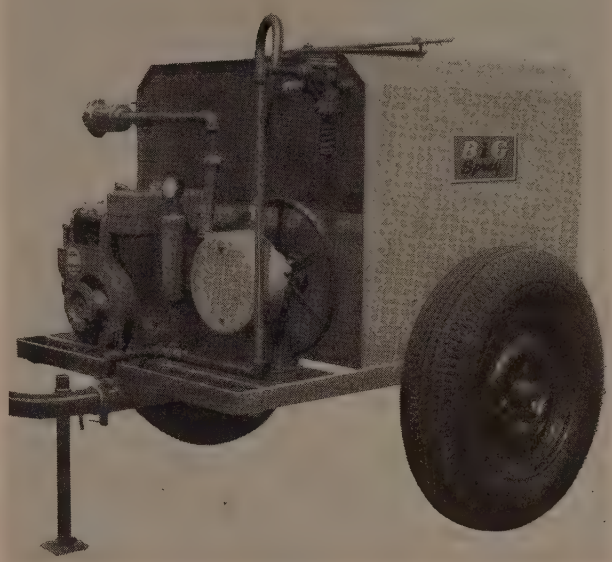
B & G COMPANY

PLUMSTEADVILLE, PA.

Branch Office:
2640 Myrtle Springs Rd.,
Dallas 20, Texas

SUPER BiG SPRAY HAS REAL POWER SPRAYS UP TO 20 GALLONS A MINUTE

ADJUSTABLE PRESSURE FROM 0 TO 500 LBS. . . . USE IT FOR EVERY TERMITE CONTROL JOB



YOU GET PERFECT PRESSURE FOR EVERY APPLICATION

Versatile, fast and powerful! Use it in soil . . . under slabs . . . for treatment of voids and piers.

Compact, portable and Economical! The BiG Spray is the best business investment you'll ever make . . . the lowest cost unit available with such powerful performance.

4 Ceramic Cylinders guarantee fast, even flow and defy wear. The rugged BiG Spray is lubricated for life with dust and dirt sealed out.

B & G COMPANY

PLUMSTEADVILLE, PA

Branch Office:
2640 Myrtle Springs Rd.,
Dallas 20, Texas

The ORB BOMB contains a high potency non-toxic formula made especially for commercial and industrial use. Only 2 seconds is needed to treat 1,000 cu. ft. of space for flies. Controlled spray rate prevents waste. Fine particle size eliminates spotting. For use in control of houseflies and fruit flies. May also be used in controlling resistant roaches in areas where a non-toxic spray must be used. In ¾, 1¼ and 3 lb. sizes.

OTHER AEROSOL PRODUCTS

#102 Aerosol Deodorant
#103 Aerosol Mothproofer
#106 Aerosol Insecticide
#107 Roach and Ant Bomb
#104 Moth Control

All Aerosol Products with Your Private Label at Minimum Printing Charge.

Write Us For Prices And Details

ORB INDUSTRIES Wallingford Rd. Springfield, Pa.

HARGRAVE Tested Tools THE CINCINNATI TOOL COMPANY

SAVE 50%

on drilling costs with

HARGRAVE PATENTED POINT V-FLAT DRILL

for Electric or Pneumatic Hammers

INDIVIDUALLY TESTED HARDNESS AND TOUGHNESS

- CUT FASTER
- TRIP HAMMER FORGED
- WEAR LONGER
- SHARPEN EASIER

ECONOMICAL FOR CONCRETE, STONE AND MARBLE

OTHER HARGRAVE SUPERIOR QUALITY MASONRY DRILLS

HAND STAR DRILLS — CARBIDE TIPPED ROTARY DRILLS

CORE DRILLS

Multiple Carbide Inserts

Temper Hardened Increases Drill Life 500%

CLAMPS A size and Type for Every Job.

SPRING CLAMPS Instantly Applied and Removed

"C" CLAMPS All Types All Sizes

Available at Your Local Distributor

WRITE FOR FREE CATALOG | **THE CINCINNATI TOOL CO.** 1990 Waverly Road, Cincinnati 12, Ohio

APPLICATORS: Fumigation (Cont'd.)

Tryco Mfg. Co., 1600 N. Calhoun, Decatur, Ill.
Winru Chemical & Sales Co., 923 State Line, Kansas City, Mo.

CLAMPS: Spring

Adjustable Clamp Co., 414 N. Ashland Ave., Chicago, Ill.
Cincinnati Tool Co., 1990 Waverly Ave., Cincinnati, O.
Hoosier Tarpaulin & Canvas Goods Co., Inc., 1302-10 W. Washington St., Indianapolis, Ind.
Neil A. Maclean Co., 9846 E. Alpaca St., El Monte, Calif.; 1536 Industrial Way, Belmont, Calif.

FANS

Aerovent Fan Co., Piqua, O.
American Blower Corp., 632 Fisher Bldg., Detroit, Mich.
Buffalo Forge Co., P.O. Box 985, Buffalo, N. Y.
Clarage Fan Co., North & Porter Sts., Kalamazoo, Mich.
H. D. Hudson Mfg. Co., Inc., 589 E. Illinois St., Chicago, Ill.
Neil A. Maclean Co., 9846 E. Alpaca St., El Monte, Calif.; 1536 Industrial Way, Belmont, Calif.
Westinghouse Sturtevent Div., Hyde Park, Boston, Mass.
Winru Chemical & Sales Co., 923 State Line, Kansas City, Mo.

FUMIGANT CONCENTRATION MEASURING EQUIPMENT

Compact Air Samplers, 825 Belmont Park North, Dayton, O.
Gow-Mac Instrument Co., 100 Kings Rd., Madison, N. J.
Robert K. Hassler Co., Inc., P.O. Box 177, Altadena, Calif.
Neil A. Maclean Co., 9846 E. Alpaca St., El Monte, Calif.; 1536 Industrial Way, Belmont, Calif.

FUMIGATION CHAMBERS

Champion Co., Springfield, O.
J. P. Devine Mfg., Inc., 100 49th St., Pittsburgh, Pa.

HEAT EXCHANGERS

Black J. Chemical Products, 1643 12th St., Santa Monica, Calif.
Neil A. Maclean Co., 9846 E. Alpaca St., El Monte, Calif.; 1536 Industrial Way, Belmont, Calif.
Southern Mill Creek Products Co., 1906 N. Armenia, Tampa, Fla.

LEAK DETECTORS

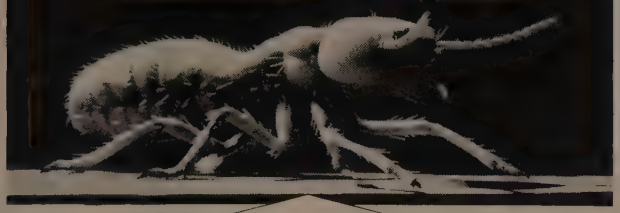
Otto Bernz Co., Inc., 280 Lyell Ave., Rochester, N. Y.
Compact Air Samplers, 825 Belmont Park North, Dayton, O.
Gow-Mac Instrument Co., 100 Kings Rd., Madison, N. J.
Robert K. Hassler Co., P.O. Box 177, Altadena, Calif.
Linde Aire Div., Carbide & Carbon Chemicals Corp., 30 E. 42nd St., New York, N. Y.
Neil A. Maclean Co., 9846 E. Alpaca St., El Monte, Calif.; 1536 Industrial Way, Belmont, Calif.
Southern Mill Creek Products Co., 1906 N. Armenia, Tampa, Fla.

MASKS: Gas

Acme Protection Equipment Co., 1225 Kalamazoo St., South Haven, Mich.
Hub States Chemical & Equipment Co., 1255 N. Windsor St., Indianapolis, Ind.
Neil A. Maclean Co., 9846 E. Alpaca St., El Monte, Calif.; 1536 Industrial Way, Belmont, Calif.
Mine Safety Appliances Co., 201 N. Braddock Ave., Pittsburgh, Pa.
Southern Mill Creek Products Co., 1906 N. Armenia, Tampa, Fla.
Willson Products, Inc., Reading, Pa.

POSITIVE PROTECTION

against termites and decay



Wolmanized®

PRESSURE-TREATED LUMBER

When used to replace damaged wood, Wolmanized® pressure-treated lumber safeguards your own chemical control methods and provides a lifetime of protection against termite and decay attack. Wolmanized lumber is clean, paintable, odorless, noncorrosive and meets building codes and government specifications.

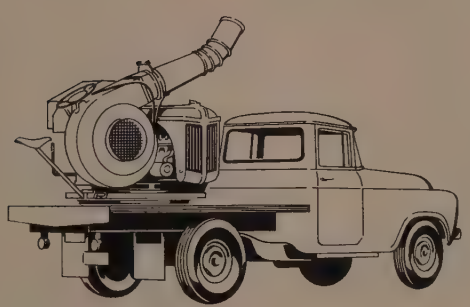
For how—where and why . . . to use Wolmanized lumber write for free eight page booklet.

W-65

WOLMAN PRESERVATIVE DEPT.
KOPPERS COMPANY, INC.
763 Koppers Bldg., Pittsburgh 19, Pa.

PERFECT FOR PEST CONTROL

HARDIE *AERO-MIST*® SPRAYER



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5/16 - 4			1.40	3.33	4.00	4.34
5/16 - 6			1.40	3.33	4.00	4.34
3/8 - 4			1.53	3.73	4.40	4.74
3/8 - 6			1.53	3.73	4.40	4.74
7/16 - 4			1.73	3.87	4.54	4.87
1/2 - 1/4	Sk		2.00	4.00	4.67	5.00
1/2 - 3/8	Sk		2.00	4.00	4.67	5.00
5/8 - 6			2.40	4.67	5.34	5.67
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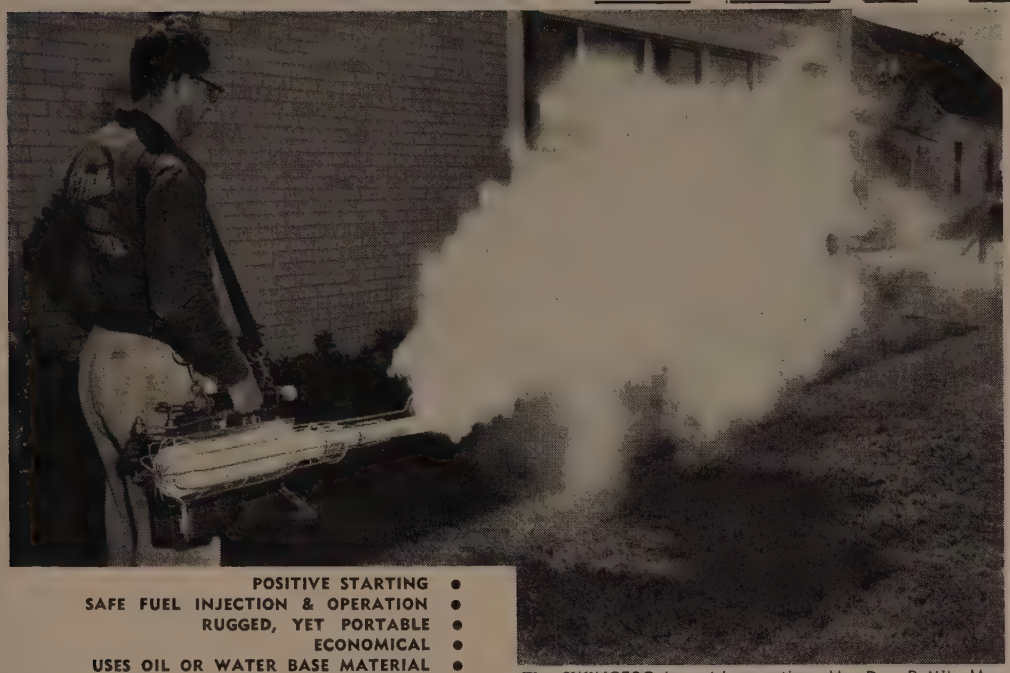

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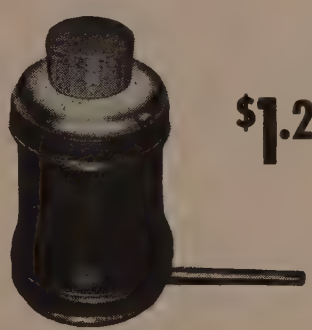

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Solvit Chemical Co., Inc., 3734 Speedway Rd., Madison, Wisc.
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Universal Paper Products Co., 380 Lexington Ave., New York, N. Y.
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Rockwell Laboratories, 300 S. 3rd St., Kansas City, Kans.
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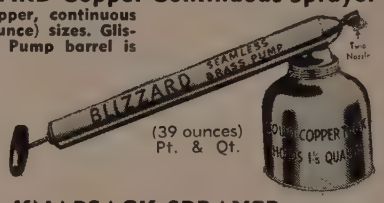

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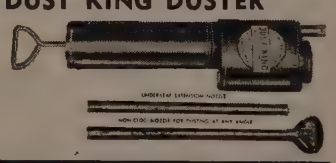

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Venomous Animals, Spiders, and Insects

PART FIVE:

REPTILES

by SHERMAN MINTON, M.D.

Visiting Professor of Microbiology
Basic Medical Science Institute
Karachi, Pakistan

This installment wraps up Dr. Minton's five-part series. In four previous articles, he covered scorpions, stinging insects, spiders, centipedes. Based on a talk which he gave at the 22nd Annual Purdue PCO Conference last year, Dr. Minton's series was nearly a year in production; reflects a broad interest in venoms that goes all the way back to his childhood.

Sidewinder, a deadly rattlesnake, from two dramatic angles. In the photo directly above, notice rattles on the snake's tail. Both pictures are by UCLA researcher, Roy Pence.

MUCH MORE is known of snakes than any other group of venomous animals; nevertheless, there are serious gaps in our knowledge, and a good deal of misinformation still exists.

It is important to realize there is no way to distinguish poisonous snakes from those that are nonpoisonous, except by the presence of fangs and venom. The widespread belief that poisonous snakes have wide heads and thick bodies, while harmless snakes do not, has led to a few tragedies and many narrow escapes in lands where slim, small-headed, deadly snakes such as mambas, kraits, and coral snakes are found. Conversely many harmless snakes have wide heads and thick bodies.

The best way to recognize poisonous snakes of an area is to observe carefully some live or freshly killed specimens. Thoughtful study of good photographs or drawings is the next best procedure.

Luckily, it is unusual for an area to have more than four or five species of dangerous snakes common enough to be a hazard. Although 18 species of poisonous snakes are known from Costa Rica, 49 of 58 snakebites where the offending reptile had been reasonably well identified were caused by only three species.

The idea that poisonous snakes are savage, vindictive creatures with an enmity toward man is a myth that dies hard. Although their reactions are variable and unpredictable, snakes will sometimes submit to a surprising amount of annoyance without biting. Nearly every deadly species has at one time or another been handled freely and without striking by some uninformed or reckless person.

Only a comparatively small number of species of poisonous snakes are truly deadly. By this we mean that, if untreated, their bites will result in death more often than survival. In this light, there is nothing mysterious about religious zealots who survive many snakebites, although refusing medical aid. The snakes they

handle simply aren't dangerous enough to kill in the majority of cases. There are other factors involved, such as the development of a genuine immunity in a few cases and the doctoring of the snakes before handling so they are less likely to give a full dose of venom.

It is quite possible to be bitten by a poisonous snake and receive little or no venom. Dr. H. A. Reid was extracting venom from an extremely poisonous species of sea snake in the laboratory of the London School of Tropical Medicine when the snake's head slipped from his grasp, and he was bitten on the finger so viciously one of the fangs broke off in his flesh. In spite of this, Dr. Reid recovered with minimal symptoms of poisoning. Soon after the bite, an assistant milked the same snake and obtained a full yield of venom estimated as sufficient to kill 14 persons. The snake, for some unknown reason, had simply held back most of its ammunition when striking the researcher's hand.

Poisonous snakes differ so much in their habits and habitat that it is impossible to generalize about them. The most dangerous species are those adapted for life in thickly populated areas and particularly on agricultural land. Snakebite the world over is primarily an affliction of the small farmer who tills his land by primitive methods, the plantation laborer, and the families of those living in such areas.

Poisonous snakes are attracted to human habitations mainly by the presence of abundant food in the form of rats, mice, and, in some parts of the world, small geckos or house lizards. Rodent and insect control, sound construction of buildings, and clean-up of rubbish to reduce harborage for both snakes and their prey is the most effective method of snake control.

Although snakes should be killed whenever found around inhabited areas, this method alone rarely reduces their numbers.

Feeding habits of snakes make poisoned baits almost worthless, and toxic sprays or gases are ineffective unless used in such high concentrations that virtually all living things in the area are endangered.

Trapping is not generally successful, nor are control measures away from inhabited areas. In temperate zones, large numbers of some species of poisonous snakes such as rattlesnakes may be killed at hibernating dens.

Although introduction of snake predators, such as the mongoose, has usually created more problems than it solved, protection of the large native nonpoisonous snakes in many areas seems to help control the poisonous species. This is because nonpoisonous snakes are often effective competitors with venomous species and sometimes predators as well.

Among the lizards are only two known venomous species, the gila monster and the Mexican beaded lizard or escorpion. They are large, sluggish creatures, not common and not particularly dangerous.

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Ventilators—How to Buy Them; Where and How to Install Them

In crawl-space homes, a termite job doesn't end with chemical treatment, structural alterations, or sanitation. The termite operator must also check under-house ventilation. Unless there is sufficient movement of air in unexcavated areas underneath, there will be a build-up of moisture in the wooden understructure that could later lead to damage not only from termites, but from carpenter ants, fungi, mildew, and rot, as well. Installation of ventilators by the TO will help eliminate this problem.

But, how do you determine the number of ventilators needed and where to install them? How do you estimate the amount of ventilation needed in these crawl spaces, using a standard 8″ x 16″ ventilator?

What FHA Requires

For crawl space homes, the Federal Housing Administration in its 1959 Minimum Property Standards, calls for at least 4 foundation wall ventilators . . . one located close to each corner of the space, so there will be a total ventilating opening not less than 1/150 of the area of the basementless spaces; or

Ground surface treatment . . . in the form of a vapor barrier material . . . plus at least 2 foundation wall ventilators which will provide a total ventilating opening not less than 1/1500 of the area of the crawl space.

FHA does not require foundation wall ventilators for a crawl space one side of which, exclusive of structural supports, is completely open to a basement, "except that such basementless areas having a greater area than the basement shall be separately ventilated."

John M. Dickerman, executive vice president of the National Association of Home Builders, sees no reason for the operator ever to exceed FHA's requirements.

"The MPS for ventilator installation is a recognized industry standard," he says. "Although the importance of ventilation in structural spaces should be recognized, we should also recognize the fact that any requirement providing more than the adequate amount of ventilation would be serving no useful purpose."

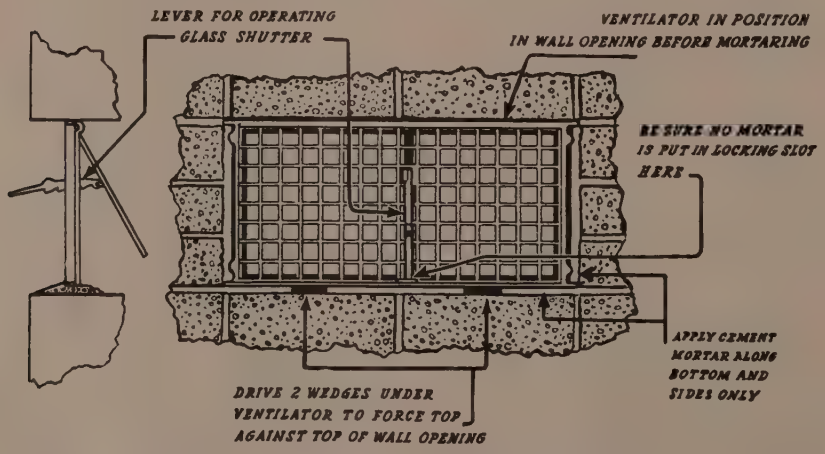
Estimating FHA Vent Needs

To figure the ventilator requirements of a crawl-space home in order to get a total ventilating opening not less than 150th of the area of the basementless spaces, this is what you do, according to Henry R. Isherwood of Associated Sales and Supply Co., St. Louis, Mo., a ventilator supplier. Divide the net opening area required into the square foot area of the crawl space. Then convert this answer from square feet into square inches, and divide by 128 or the number of square inches in an 8″ x 16″ ventilator. To compensate for the cross bars and/or wire mesh of a vent screen, which reduce the amount of air that can come in, this final figure should be multiplied by two.

Right way (top) **and wrong way** (bottom) to install a ventilator. In the bottom photo, notice the cement oozing up into the grill and the "smeared" appearance of the brick. Both pictures were furnished by Associated Sales & Supply Co., St. Louis, Mo.

For example, if the crawl space area measures 1,200 square feet, divide by 150 (FHA's ventilation requirement), giving you 8 square feet. To convert 8 square feet to inches, multiply by 144, and you would come up with 1,152 square inches. When this is divided by 128, you have 9. Now double that — to 18 — and you know how many ventilators you should install under a home with 1,200 square feet of crawl space. If the answer had been 18.5, then 19 vents should be used. If it had been 18.4, the requirement would be 18 ventilators.

"Because the frame of the ven-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Installation of the shutter-type ventilator. Sketch, courtesy Lite-A-Vent Corp., Tulsa, Okla.

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tilator and its cross wires cut down considerably on the actual opening which admits air," Isherwood says, "it may be necessary to figure ventilation requirements scientifically. A simpler way to estimate the requirement is to figure that the ventilator size should equal 1½% of the unexcavated area."

Both of Isherwood's techniques for figuring a ventilator requirement — the longer scientific method and the other approach, figuring 1½% of the unexcavated area — are based on the theory that the ventilator will have a net free ventilating area of only 50%. This is probably true for some ventilators, but may be too restrictive for others. In general, when the opening is obstructed only by screening with 8-mesh to the inch, several authorities feel the gross area provided should be 1¼ times the specified net area. FHA requires 8-mesh screening for all exterior ventilator openings.

Walter E. Arndt of Leigh Building Products, Coopersville, Mich., another ventilator manufacturer, suggests that once the ventilation requirement in square inches has been determined, the operator should divide that figure by the free area of whatever vent he is going to use. This will tell him the number of vents he needs.

"Finding the free area of the ventilator is no problem," according to Arndt, "since all manufacturers are now required to stamp this information on every ventilator they make."

NPCA's Requirement

An even simpler way, prescribed in the Approved Reference Procedures for Subterranean Termite Control, published by the National Pest Control Association, suggests that for average conditions, structures with a perimeter of 200 feet or less should have a minimum of 2 square feet of ventilation for each 25 lineal feet of outside foundation. For structures with a perimeter of 250 feet or more, the ARP says that ventilator openings should be equal to ½ square foot for each 25 lineal feet of exterior foundation wall, plus ½ of 1% of the area enclosed by the foundation. For structures between 200 and 250 feet in perimeter, either formula could be used.

California Standards

According to the California building standards: "Where conditions indicate inadequate ventilation and where practical, subfloor ventilation shall be increased to equal 2 square feet of ¼ inch hardware cloth opening to every 25 lineal feet of wall, with 1 square foot of opening within 5 feet of each corner."

To overcome dead air space, Isherwood believes this distance from the corner could be even less.

"Don't put the ventilator over 3 or 4 feet from each corner," he advises. "It is also important that ventilators be placed opposite each other to get a cross ventilation, where possible."

Buying the Ventilator

Once the air requirement of a crawl space has been determined, next step is the selection of a ventilator. Although aluminum and steel ventilators are most commonly used, models with wood framing are also available. However, the California building standards specify that when wood framing is used in vents, they

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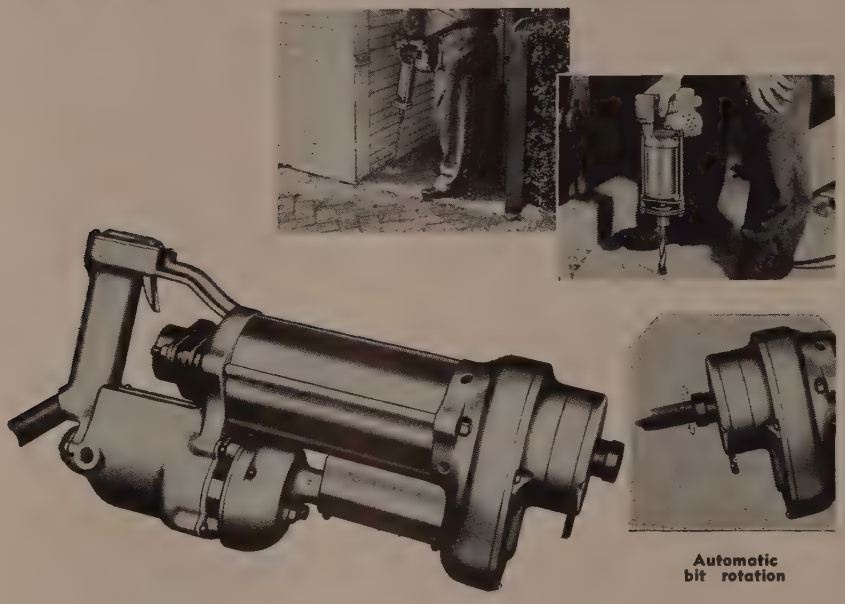

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should be at least 3 inches above grade or be protected by vent wells to lower the grade, according to Fred Switzer, executive secretary of Pest Control Operators of California, Inc.

Ventilator supplier, Richard S. Arnell of Lite-A-Vent Corp., Tulsa, Okla., suggests five other important points to look for in a ventilator. He says to ask yourself these questions before making a selection:

1. Does the ventilator provide maximum light and air?
2. Is it subject to corrosion, deterioration, or will it require maintenance?
3. Can it be closed to protect against bad weather and keep pipes from freezing or is it necessary to rely on the customer or serviceman to stuff paper, rags, etc. into it between seasons?
4. If it has its own shutter, is it sufficiently close-fitting to protect against winter heat loss?
5. Is it professional-looking enough to serve as a recommendation for referral business?

Placement of the Vent

"To install the ventilator," Arnell says, "keep the top of the opening level and smooth, since no mortar will be applied to the top edge of the ventilator. The bottom of the plate or sill is usually the top of the opening in frame construction.

"The ventilator must be placed perfectly straight with the foundation, about 1½" back from the exterior surface of the wall. Next, two small wedges should be driven under the bottom of the ventilator in order to force its top surface tightly against the top of the opening. Then apply fairly stiff mortar (one part Portland cement and one part clean sand) at the side and bottom of the ventilator. Neatly trowel and bevel from the exterior edge of the wall."

Both Isherwood and Arnell stress the importance of neat, professional-looking installations that will be an asset to the structure. To the homeowner, this is important since the ventilator often represents the only tangible evidence he has that something was done to protect his home against termites. This point alone is a supplementary reason for selling homeowners on having ventilators installed when you do termite work in crawl-space residences. There are also sanitation

and public health considerations that should be stressed in your sales talk.

"Some termite operators feel the installation of a 'good' ventilator will add so much to the cost of a job that its use must be confined to customers in the upper-income brackets," Arnell states. "This is not true, since the difference in cost between a good and a mediocre quality ventilator is very little, compared to the added protection given to the customer.

"A customer of lesser means, who is interested enough to consider the services of a professional termite operator, should be told that a quality ventilator is intended as a one-time installation. Mr. Average Earner usually has as much pride in his home as Mr. Rich and normally wants the better ventilator when it is offered."

Closely related to ventilators are access doors. Although the primary purpose of an access door is to permit entry into a crawl space, there are non-corrosive doors with built-in controlled ventilation to provide supplemental air flow in unexcavated areas. When wooden doors are used, they should be treated with pentachlorophenol or its equivalent. Ventilator suppliers usually carry access doors also.

"Most existing access doors are made of wood and are usually in a state of deterioration," Arnell states. "They are often a major source of attraction for termites and fungi because of their proximity to the ground."

Arnell said the five criteria for buying a good ventilator also apply to access doors. Of course, access doors also make re-inspection of under-areas much easier.

On that next termite job with an unexcavated area, check the ventilation to see if it is adequate for the crawl space. Proper air movement will not only help protect against re-invasion of the home by termites, but will also help discourage other wood-damaging organisms. Ventilator installation will, as well, help safeguard the customer's health and give the customer something a little more tangible for his money—not a small point to overlook, termite operators have found.

Acme Describes Mask Needs

Acme Protection Equipment Co. has prepared a four-page bulletin, describing characteristics of insecticides and fumigants and PCO mask protection needs.

To obtain a copy, write Acme Protection Equipment Co., 1201 Kalamazoo St., South Haven, Mich. and request Bulletin 591, "Useful Information for Users of Insecticides and Fumigants."

Bean Issues 5 Catalogs

Five new catalogs on its Diamond Jubilee Sprayer line for 1959 have been released by John Bean Division, Food Machinery & Chemical Corp., Lansing 4, Mich.

Illustrated with action and cutaway photographs, the catalogs cover complete specifications on each Bean sprayer model.

Catalogs available are "Orchard Sprayers," L-1449-59; "Royal High Pressure Sprayers," L-1450-59; "Row Crop Sprayers," L-1451-59; "215 Series High Pressure Sprayers," L-1454-59; and "Royalette All Purpose Sprayers," L-1453-59.

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"Operations Clinic" Airs Mosquito Control Problems, Solutions During Salt Lake City AMCA Convention

A no-holds-barred "Operations Clinic" kept a full-house of mosquitomen participating in an open discussion headed by a panel of 12 experts in Salt Lake City, Utah, during the middle of last month. Occasion was the 15th annual meeting of the American Mosquito Control Association held in conjunction with the 12th annual conference of the Utah Mosquito Abatement Association, April 12 to 15 in Hotel Utah. Over 300 registered.

Problems covered during the clinic centered on those developed from a survey of 51 abatement agencies. Included were those on new or improved formulations, resistance, toxic hazards, equipment, source reduction, control evaluation ("best way is to ask the public," one expert cracked), and those associated with administration and management.

"Wet" Suburban Housing

The population explosion to suburban areas is bringing with it mosquito problems new to the group, those resulting from improper drainage in housing subdivisions. Such troubles appear to be country-wide, for reports from abatement officers in Florida, Illinois and California amplified this new source for stagnant water mosquito breeding.

Speculative real estate developments spring up, sometimes on flood plains, and usually with no plans for adequate run-off. Septic tanks, inadequate provision for disposal of organic wastes, and disruption of natural drainage soon bring cries for mosquito control. As termite men know, these causes of excess moisture help colonies of subterranean termites to thrive and threaten new housing as well.

Only remedy appears to stimulate legislative bodies to require of all developers adequate drainage for any project and, in some instances, prohibit the establishment of a get-rich-quick development on land unsuitable for housing. Forewarning the public is another prong of this same weapon for source reduction as populations move to the suburbs.

An older problem, but one for which no satisfactory answer seems to have been found, is how to increase insecticidal effectiveness in organically polluted breeding areas.

Dr. George W. Pearce, renowned insecticidal chemistry expert associated with the U. S. Public Health Service in Savannah, Ga., explained that a preponderance of organic matter results in masking the effectiveness of insecticides and prevents them from contacting the larvae. The only practical answer to date, he said, seems to be in using improved formulations that have more efficient dispersing agents that will prevent agglomeration.

Use of granules over water-breeding sources appears to be gaining in popularity. Suppliers are reported to be much interested in developing granular formulations because mosquitomen have found granules provide better penetration through thick foliage and tend to reduce objectionable residues. Florida tests indicate good control on some Culicine and Anopheline species with paris green, a heavy granular material. Indications are this pesticide might also be effective for control of Mansonia mosquitoes which breed down deep.

Target: Suppliers

Whenever customers outnumber suppliers in open discussions, it's open season to lay all complaints at the peddlers' feet. Mosquito controllers, like everyone else in pest control, wanted to know if insecticides were going to get cheaper, if there's any hope for lower-priced equipment, and what causes this or that failure.

Delegates from Florida reported difficulty with their malathion in oil formulations which develop a gummy, purple deposit in the bottom of storage and equipment tanks. Several said a variety of oil bases had been tried, and formulations were stored in glass as well as in metal tanks, but the thick, sticky stuff continued to collect at the bottom. While mosquitomen from California said they had not experienced this equipment-clogging difficulty, no explanation was offered for the troubles which appeared to be common in Florida.

When it comes to making equipment more durable and less expensive, panel members Dr. William Dickison of H. D. Hudson Manufacturing Co., and Jack Fegtly of John Bean Division, reminded delegates of limitations customers have set upon their suppliers.

Fegtly explained that while metal and fabricating costs continue to rise, today's equipment

AMCA officers: (left to right) '58-'59 president, Commander John M. Hirst; recording secretary, A. F. Geib; executive secretary, T. G. Raley; '57 president, Dr. A. W. Lindquist; vice-president, Dr. W. E. Bickley; president-elect, Daniel M. Jobbins; president, Dr. Archie D. Hess; national advisor, Robert L. Vannote; and editor of "Mosquito News," Dr. Donald L. Collins. Not pictured is treasurer, Lester W. Smith.

At the Salt Lake Mosquito Meeting

Panel members for the "Operations Clinic": (left to right) Dr. W. F. Durham, U. S. Public Health Service, Wenatchee, Wash.; Dr. G. W. Pearce, USPHS, Savannah, Ga.; W. P. Warner, Arthropod Control, Polk County, Bartow, Fla.; W. J. Buchanan, S. Cook County Mosquito Abatement District, Harvey, Ill.; Dr. A. R. Burr, Calif. State Dept. of Public Health, Fresno; Dr. Wm. Dickison, H. D. Hudson Mfg. Co., Chicago, Ill.; Jack Fegtly, John Bean Div., San Jose, Calif.; Dr. L. C. Glover, Shell Chemical Corp., San Francisco, Calif.; A. F. Kirkpatrick, American Cyanamid Co., Fresno, Calif.; Dr. D. M. Rees, Univ. of Utah, Salt Lake City; V. S. Minnich, E. Volusia County Anti-Mosquito District, Daytona Beach, Fla.; and C. D. Grant, San Mateo County MAD, Burlingame, Calif. Moderator, not pictured, was Dr. A. D. Hess, USPHS, Greeley, Colo.

(1) Utah's Governor, Hon. George D. Clyde (left) chats with Glen C. Collett, convention finance chairman, and Cmdr. J. M. Hirst, US Navy Preventive Medicine Unit No. 6, Pearl Harbor, Hawaii. **(2) Three first-day speakers:** (l to r) Dr. A. W. Lindquist, chief, USDA Insects Affecting Man & Animals Research Branch, Prof. Don M. Rees, Univ. of Utah, and Dr. George W. Pearce, USPHS, Savannah. **(3) Pioneer mosquitomen** (l. to r.) Harry H. Stage, Spokane, Wash., Harold Farnsworth Gray, Oroville, Calif., and Dr. Louis L. Williams, Pan American Sanitary Bureau, WHO, Washington, D. C. **(4) (5) (6) Outdoor equipment demonstration** of (l to r) Buffalo Turbine Sprayer-Duster, Besler Corp. Bes-Kil Aerosol Sprayer, John Bean's new Model 50 Rotomist. **(7) Calif. vector control chief,** Dr. Richard F. Peters. **(8) Checking registration** is Jay E. Graham (center with clipboard under left arm) exhibits chairman. **(9) CDC chief** of Technical Development Laboratories, Kenneth D. Quarterman, Savannah, Ga.

is more efficient and more versatile, thus in effect "reducing" the total cost of application machinery.

When it comes to making sprayers "lighter" and "more durable," Dr. Dickison explained how much a sprayer weighs is going to depend upon what the user expects it to do. And, "durability" is determined by definition. He suggested the AMCA, or other user groups get together to define the degree of durability desired so manufacturers can design equipment to meet it.

Government surplus equipment is being made available to some public health agencies, but is not readily accessible to mosquito abatement districts. The AMCA is attempting to make its member agencies eligible. A delegate from the floor warned, however, that spare parts for surplus equipment are rarely available and that if needed, must be tailor-machined at considerable expense and delay.

Proper use of application equipment has its effect on resistance, too, and much more attention needs to be given toward this phase of control work. So observed Dr. A. J. Rogers of the Florida State Board of Health in Vero Beach. Application failures cannot be blamed solely on toxicants and pesticide formulations; 50% of the troubles might be laid to improper use of equipment, he said. Aerial applicators should have a copy of "Aerial Application of Agricultural Chemicals" published by Texas A & M College in Dallas, Dr. Rogers recommended. It is the best guidebook to date.

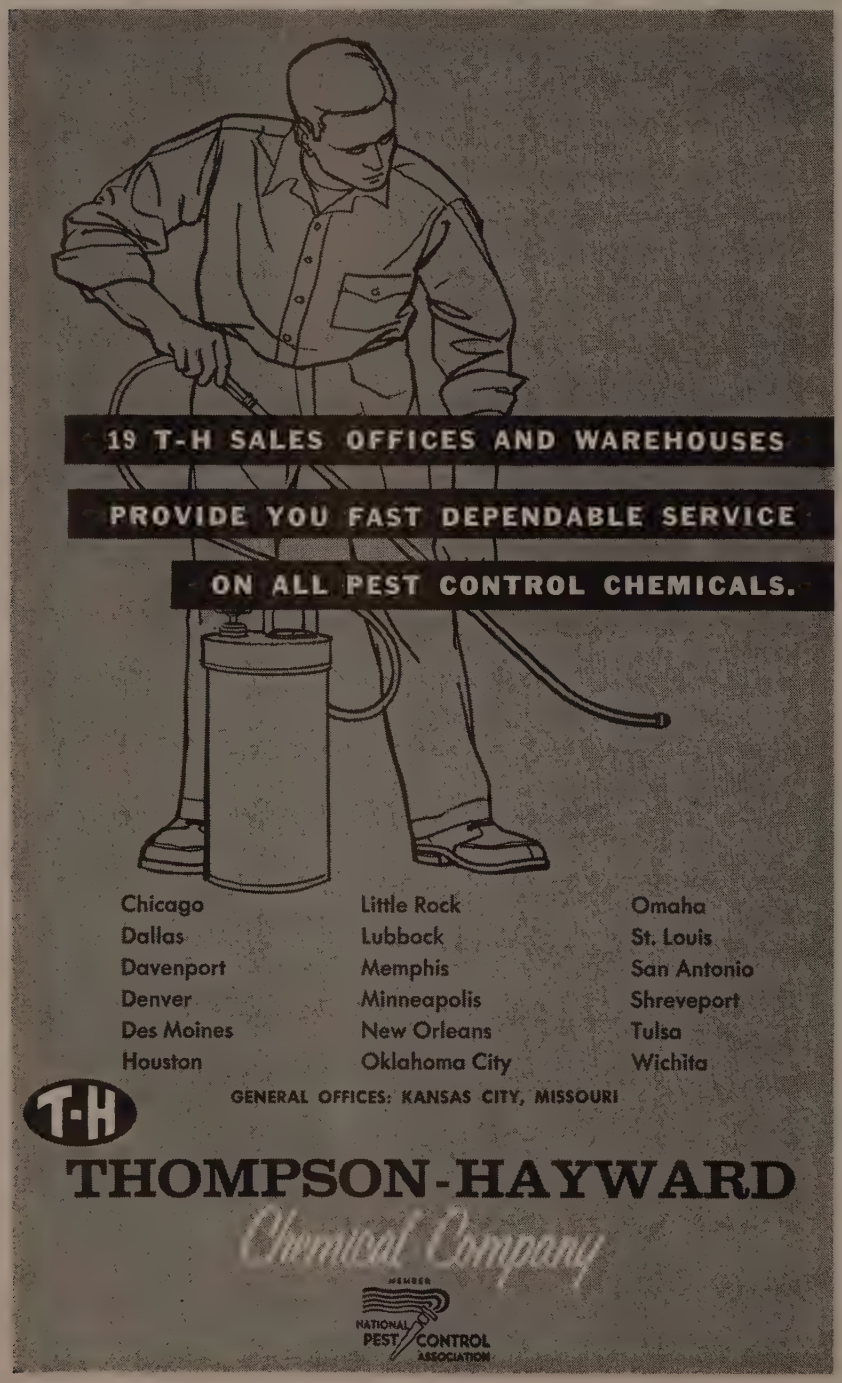
In the chemical phases of resistance, Dr. Robert F. Harwood, said the rotating of insecticides is not very practical. From the State College of Washington in Pullman, Dr. Harwood did suggest that in areas where resistance has not yet developed, the rotation of insecticide groups (such as DDT, chlordane, phosphates) on a seasonal basis might slow down, or delay this kind of insecticide failure.

Once mosquitoes have become resistant to an insecticide group, it's impossible to revive the material even after extended periods of non-use, according to Dr. William M. Hoskins of the University of California in Berkeley.

He said experience in Sweden has proved this conclusion. Chlorinated hydrocarbons were used effectively for many years, but when resistance became a serious problem, the government stopped all applications of this group of insecticides. Then, six years after cessation, Swedish scientists thought resistance might have been worked out of hardy strains and use of the chlorinated hydrocarbons began again. Result: after only two applications populations were once more from 85 to 90% resistant to this group of pesticides.

Dr. Pearce suggests that a new space spray dibrom derivative being developed by California Spray Chemical Co. may find a place in helping to overcome resistance.

Time ran out before all subjects programmed could be covered in the three and a half-hour session. These are the men who served on the panel which stimulated so many questions and observations from the floor: C. Donald Grant, San Mateo County Mosquito Abatement District, Burlingame, Calif.; V. Samuel Minnich, E. Volusia County MAD, Daytona Beach, Fla.; Dr.



Donald M. Rees, head, Dept. of Zoology, University of Utah, Salt Lake; A. F. Kirkpatrick, American Cyanamid Co., Fresno, Calif.; Dr. L. C. Glover, Shell Chemical Corp., San Francisco; Jack Fegtly, John Bean Div., San Jose, Calif.; Dr. William Dickison, H. D. Hudson Mfg. Co., Chicago; Dr. A. Ralph Barr, Calif. State Dept. of Public Health, Fresno; W. J. Buchanan, S. Cook County MAD, Harvey, Ill.; W. P. Warner, Arthropod Control, Polk County, Bartow, Fla.; Dr. George W. Pearce, USPHS, Savannah, Ga.; and Dr. William F. Durham, USPHS, Wenatchee, Wash.

Paris green, an arsenical insecticide with some copper in it that has been around for over 50 years, is once again becoming interesting to mosquitomen.

"No Anopheline larvae have ever developed resistance to paris green during the past 20 years," Florida's Dr. A. J. Rogers, told the convention. Developed primarily for control of some species of Culicine, 1958 research with paris green coated on the outside of vermiculite indicated it controls some Anopheline species very well.

Last year's experimentation resulted in improved methods of formulating the chemical on vermiculite. The original motor-oil emulsion used as a sticker in the formulation was replaced by an emulsifiable spray oil, thus eliminating the drying process required by earlier formulating methods.

The apparent advantages of the paris green-vermiculite formulation is that when the granules are distributed over mosquito-breeding water, particles of the insecticide are slowly soaked off the inert carrier and liesurely settle down through the water to the insects' breeding areas.

Gov. Clyde Opens Meeting

Keynote speaker at the opening session of the three-day meeting was George D. Clyde, Governor of the State of Utah. AMCA president, Commander John M. Hirst, who headquarters in Hawaii, welcomed the governor on behalf of the 50th State by garlanding him with a suitable lei of orchids.

At the AMCA business meeting, this year's convention chairman, Dr. Archie D. Hess, of the U. S. Public Health Service, Greeley, Colo., was elected to the AMCA's highest post—president—for the new year. This year's vice-president, Daniel M. Jobbins, of the N. J. Agricultural Experiment Station in New Brunswick, was advanced to the position of president-elect. Vice-president chosen for 1959 is Dr. W. E. Bickley of the University of Maryland in College Park.

Re-elected as executive secretary for another two years was T. G. Raley. He is from the Consolidated Mosquito Abatement District in Selma, Calif. Others chosen are treasurer, Lester W. Smith, Middlesex County Mosquito Extermination Commission, Metuchen, N. J.; recording secretary, A. F. Geib, Kern Mosquito Abatement District, Bakersfield, Calif.; and its national advisor, association pioneer Robert L. Vannote, Morris Plains (N. J.) Mosquito Extermination Commission.

Retiring president, Commander John M. Hirst, of the Navy's Preventive Medicine Unit No. 6 in the Hawaiian Islands, joins 1957

(Continued on page 66)

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What's NEWS In The Industry

Texas Drafts PCO Legislation To Keep Fly-by-Nighters Out

A structural pest control bill which would require the licensing of all PCOs in the state has been introduced into the Texas Legislature to protect the industry and public against a growing number of fly-by-night operators who are drifting into the state. According to C. Hal Jones, executive secretary of the Texas Pest Control Association, Texas has become a refuge for fly-by-nighters, since 12 neighboring states have licensing laws.

"There is a great need for some kind of legislation," Jones told PC. "The draft of this law would be okay for a starter and could be strengthened with experience. If promoted right, the proposed law would become a symbol for legitimate and responsible pest control service."

Lonnie Holder of Holder's Pest Control, Houston — Texas PCA president—adds that the bill will not run the "little" men out of business, as some critics charge.

"I have only two trucks," Holder said, "but I still believe this act will be good for us."

Labelled Senate Bill #325 and House Bill #736, the proposed law would establish a Pest Control Board, under the State Department of Agriculture, to administer and enforce the act. On the Board would be the Commissioner of Agriculture, a Texas A & M College entomologist, and six PCOs.

As originally drafted, the bill provides that only professional PCOs and their branch managers would need licenses — not their employees.

Before he can take the Board's license examination, an applicant must be of good moral character, a citizen of the U.S., and at least 21 years of age. The applicant also would need at least two years experience with a licensed PCO in Texas or have had equivalent training elsewhere. One year under university or college supervision could be substituted for one year's practical experience. An applicant with a degree from a recognized college or university, with not less than two years training in entomology, sanitary, or public health engineering would, likewise, be eligible for a license if he meets the other qualifications.

The initial license fee would be $25, and the annual renewal fee — $10.

Another expense would be contractor's public liability and property damage insurance. The bill requires each operator to have $5,000 minimum coverage for property damage; and for public liability — not less than $25,000 coverage for one person injured in any one occurrence, and not less than $50,000 coverage for more than one person injured in a single accident.

Persons wishing a copy of the bill should write C. Hal Jones, executive secretary, Texas Pest Control Association, 2742 Southwood Dr., Dallas, Tex.

Conn. PCA Plans Dinner Fete

The Connecticut Pest Control Association will commemorate its 20th anniversary May 12 with a dinner at Gallo's Restaurant in Newington.

Special guests include toastmaster, Neeley Turner, chief entomologist of the Connecticut Agricultural Experiment Station, New Haven; main speaker, Dr. Ralph E. Heal, executive secretary of the National Pest Control Association; and second speaker, Jacques J. Hess, Exterminating Services Corp., New York, N. Y. Hess will discuss "The Past 20 Years of Pest Control." Dr. Heal's topic has not been announced yet.

Ky. PCO Exam Set June 16

The next pest control examination in Kentucky will be conducted June 16 at 9 a.m. in the Agriculture Building, University of Kentucky, Lexington. For full details, write Earle B. Hutchins, State Inspector, Division of Weights & Measures, State Department of Agriculture, Frankfort, Ky.

Publish FDA Tolerances

The March 1959 issue of News and Pesticide Review, published by the National Agricultural Chemicals Association, carries the latest list of Food and Drug Administration chemical residue tolerances, complete through March 1, 1959.

For a copy of the 15-page issue, write the NACA at 1145 19th St., N.W., Washington, D. C.

Presentation came later. Last month Purdue University announced the awarding of the Pest Control Magazine Scholarship to sophomore pest control student, Paul Estes, from Memphis, Tenn., but the actual presentation followed the announcement by two weeks. Here, Associate Dean of the School of Agriculture, V. C. Freeman (left) presents Paul Estes with the scholarship check, with Entomology Department head, Dr. John V. Osmun, and William L. Butts, (right) in charge of Purdue's 4-year PCO course looking on. Dean Freeman commented, "This represents a very significant advancement in our program here and exemplifies the progressive thinking emanating from the Board of Pest Control magazine." Dr. Osmun wrote us, "By sheer coincidence, I happened to be carrying a couple of copies of Pest Control magazine at the time the picture was taken."

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Pacific NW Conference Keyed To Rodents, March 16-18

A special serviceman's school for rodent control highpointed the 10th annual Pacific Northwest Pest Control Operators Conference at Spokane, Wash.'s Ridpath Hotel March 16-18.

The rodent control sessions were conducted by Harry R. Lunetti, rodent control specialist, Tacoma-Pierce County Health Department; William Wittstruck, sanitarian with the Spokane Health Department; and D. I. Osburn, Osburn Kemical Company & Pest Control Service, Inc., Great Falls, Mont.

Wittstruck cited the general acceptance of professional rodent and insect control service by food plant management; said such services are now recognized by the food industry as a valuable preventive, rather than curative, measure in protection of food supplies.

"The Spokane Health Department has helped PCOs in their work by securing garbage and refuse pick-up service in the Spokane area," Wittstruck added. "This has eliminated much of the food supply of rats, roaches, and flies. Another ordinance, which has been enacted, requires rodent control and ratproofing in certain types of buildings.

"Our Sanitation Department is constantly on the alert for infestations in food establishments, and we do not hesitate to advise regular service by a licensed PCO. There is no competition between work done by PCOs and health officials."

In talks touching on stored grain insect control, Leroy Meek, chief food inspector with the U. S. Department of Agriculture, Olympia, Wash., and John A. Kedzior, chief inspector for the Food and Drug Administration, Seattle, Wash., stressed that perimeter treatment of storage bins is more important than control measures inside the bins. No tolerance is allowed for poisons in grain, they emphasized.

Balance of the talks at the three-day meeting were heard from other PCOs and public health personnel, chemical and equipment suppliers, and representatives of the National Pest Control Association, U. S. Fish & Wildlife Service, extension departments, universities and food plants.

1959-60 Pacific Northwest PCA officers, secretary-treasurer, Joe Smuck of Seattle, Wash., left, and president, J. E. Osborn, Paramount Pest Control Service, Midway, Wash., right, look over an insect display held by Dr. George Wagner, Pillsbury Mills, Inc., Minneapolis, Minn. Dr. Wagner spoke at the meeting on "Problem Pests in Packaged Foods." The 1960 conference will be in Seattle. No date has been announced yet.

Test PCOs' Blood at ISC Meet

Twenty-one of the 28 PCOs attending the 12th Annual Iowa Pest Control Short Course at Iowa State College March 5-6 had the cholinesterase level of their blood checked to determine what effect, if any, insecticides were having on their systems.

None of the samples showed any significant or serious effect, according to Harold Gunderson, Iowa State College extension entomologist.

Speakers on the short course program included ISC faculty members and representatives of the Federal Housing Administration and several chemical suppliers. A heavy snow prevented many PCOs from attending the meeting.

Annual AMCA Meeting

(from page 63)

president, Dr. Arthur W. Lindquist of the USDA's Entomology Research Branch in Beltsville, Md., with the new officers to complete the 1959 Board of Directors.

Between sessions, delegates witnessed an equipment demonstration at the Salt Lake MAD grounds where John Bean's new Rotomist, Besler Corporation's Bes-Kil, and the Buffalo Turbine mister-duster were put through their paces. Before Tuesday night's banquet in the hotel's Starlight Gardens, Willys Motors, Inc. invited the better than 300 registrants to be their guests at a special cocktail party.

Specific time and place for the 1960 convention has not been set, but indications are Boston will be chosen as the site of the AMCA's 16th annual meeting.

ESA North Central Meeting Draws 300 to Columbus

by J. J. Davis
Professor Emeritus, Purdue University
Lafayette, Indiana

The North Central States Branch of the Entomological Society of America held its annual meeting at the Neil House in Columbus, O. March 25-27. Registration was 300.

The 15 sessions ranged over systemics, toxicology, cereal and forage crop insects, forest and nursery pests, medical and veterinary entomology, vegetable and fruit insects, rearing and testing techniques, survey methods, and extension and regulatory problems.

Program emphasis centered on methods used for determining the extent of crop losses caused by insects.

Another key topic was the value of airplanes in chemical application. Speakers felt the airplane has its main advantage in the spring when weather conditions interfere with ground treatments. In comparing the relative merits of ground and air application, it was pointed out the over-all cost of treatment on an area basis is largely the same, whether application is made from the air or on the ground.

Branch officers chosen at the meeting were chairman-elect, D. M. De Long, Ohio State University, Columbus; secretary-treasurer, Gordon Guyer, Michigan State University, East Lansing; and recorder, R. T. Everly, Purdue University, Lafayette, Ind. J. M. Magner, Monsanto Chemical Co., St. Louis, Mo., was elected to the executive committee. Chairman of the meeting was Dr. Roscoe E. Hill of the University of Nebraska, Lincoln.

All of the meeting's 106 papers, or their summaries, will be published in the Proceedings of the branch. Copies of the Proceedings may be obtained for $3 each from Gordon Guyer, Department of Entomology, Michigan State University, East Lansing, Mich.

Va. Mosquito Assn. Meets

New mosquito control insecticides and progress of several municipal mosquito abatement programs were outlined at the 12th Annual Meeting of the Virginia Mosquito Control Association in Suffolk recently. Attended by 125, the one-day session was held in Suffolk's Birdsong Recreation Center.

Robert L. Vannote, secretary of the Morris County Mosquito Extermination Commission, Morris Plains, N. J., described the close cooperation growing between wildlife conservation and mosquito control personnel. G. D. Monola, Superintendent of the Food and Sanitation Division, Norfolk City Health Department, added that the same working relationship should exist between mosquito men and the health department, since both are essentially sanitarians.

USDA Opens Fruit Insect Lab

A new Fruit Insect Investigation Laboratory — equipped for studies on biology and control of fruit insects, plus insecticide residues — was dedicated by the U. S. Department of Agriculture April 5 at Vincennes University, Vincennes, Ind.

Over 150 Federal officials and entomologists from Iowa, Illinois, Kentucky, Ohio, and Indiana were on hand for the dedication. In charge of the USDA's fruit insect investigation is Dr. B. A. Porter.

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Notebook

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by Alva H. Bender
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Vacuum cleaner and drill combination, patterned on the model described here by Alva H. Bender, is used by Sentinel Laboratory of Springfield, Ill. To build it, Sentinel's Art Gibson said a hole is made through the side of a plumber's helper, and a short section of sink drain inserted into it. Then the vacuum cleaner hose fits over the pipe, to collect the drilling dust. The drill bit enters the plumber's helper from the top, where the handle of the suction tool fits.

If our workmen are careful, however, they shouldn't have much to sweep up after the job, since the bits of jackhammers are surrounded by cups connected with a hose to a vacuum cleaner that picks up all the dust created as the hammers or drills cut through concrete floors or walls.

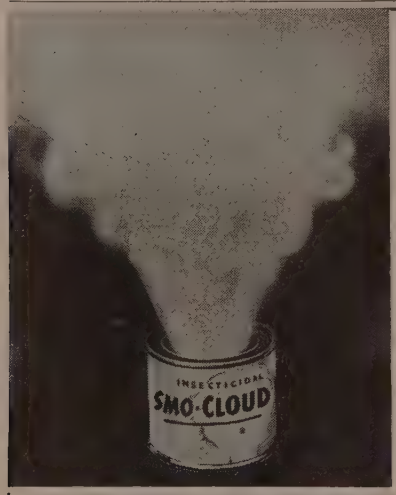
These vacuum cleaners last only six months between rebuildings, because of the abrasive action of the dust they collect. But we consider the money well spent since, right away, it creates the impression of workmanlike competence that's so important.

WARF Prints Mouse Booklet

Mouse control in homes, barns, factories, warehouses, and stores is covered in a new illustrated two-color, non-technical booklet, "Mice in Buildings," published by the Wisconsin Alumni Research Foundation.

The 14-page booklet describes the economic and public health importance of mice, how the chief species of mice in America are identified, where they are found in a building, and how they can be safely and effectively controlled, using the Foundation's cereal and water-soluble warfarin baits. Sanitation and mouse-proofing also are reviewed.

Copies of "Mice in Buildings" are available without charge from the Wisconsin Alumni Research Foundation, P.O. Box 2217, Madison, Wisc.



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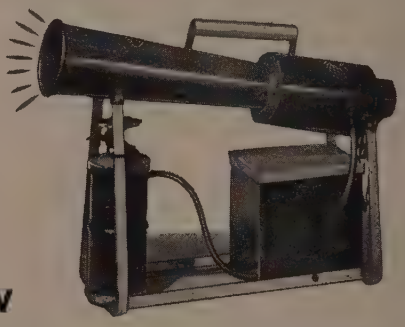

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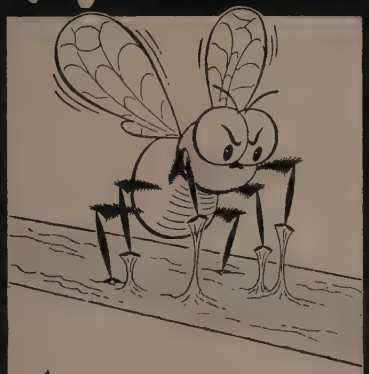

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Calendar

New York Pest Control Assn. May Meeting, Hotel Gotham, New York City, May 6, 7:30 p.m.

Connecticut Pest Control Assn. 20th Anniversary Dinner, Gallo's Restaurant, Newington, May 12, 8 p.m.

Texas Professional Pest Control Assn. of Dallas County, May Meeting, El Chico Restaurant, Dallas, May 14, 7 p.m.

Western Division, Pennsylvania Pest Control Assn. May Meeting, Webster Hall Hotel, Pittsburgh, May 14, 8 p.m.

Pest Control Assn. of South Florida May Meeting, 1960 N.W. 27th Ave., Miami, May 18, 8 p.m.

Washington (D.C.) Pest Control Assn. May Meeting, 4904 Wisconsin Ave., N.W., Washington, D.C., May 18, 8:30 p.m.

Structural Pest Control Association of Arizona Meeting, Tucson, May 16.

Chemical Specialties Manufacturers Assn. 45th Mid-Year Meeting, Drake Hotel, Chicago, Ill., May 18-20.

Maryland Pest Control Assn., May Meeting, Southern Hotel, Baltimore, May 21, 6:30 p.m.

New England Pest Control Assn., May Meeting, Worcester Airport Restaurant, Worcester, Mass., May 28, 8 p.m.

Arkansas Pest Control Assn., June Meeting, Brinkley, Ark., June 20, 10 a.m.

National Assn. of Sanitarians, 23rd Annual Educational Conference, Deauville Hotel, Miami Beach, Fla., June 22-26.

Florida Pest Control Assn. Annual Convention, Fort Harrison Hotel, Clearwater, June 25-27.

North Carolina Pest Control Assn. Mid-Summer Meeting, Morehead-Biltmore Hotel, Morehead City, July 23-25.

Virginia State Pest Control Assn. Summer Meeting, Cavalier Hotel, Virginia Beach, August 21-23.

Eastern and Western Divisions, Pennsylvania Pest Control Assn. Joint Meeting, Allenberry Inn, Boiling Springs, Sept. 11.

4th Annual Industrial and Building Sanitation-Maintenance Show and Conference, New York Trade Show Building and New Yorker Hotel, New York City, Sept. 22-24.

National Pest Control Assn. 26th Annual Convention and Trade Show, Buena Vista Beach Hotel, Biloxi, Miss., Oct. 18-22.

American Public Health Assn. Annual Meeting, Atlantic City, N.J., Oct. 19-23.

National Agricultural Chemicals Assn. 26th Annual Meeting, French Lick - Sheraton Hotel, French Lick, Ind., Oct. 21-23.

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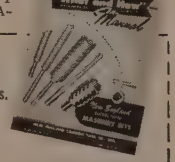

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Gentlemen: - Kindly send me a copy of the "WHAT and HOW" Manual.

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Company_____

Street_____

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Serviceman Training Outline: 5

by Robert E. Berns
Aerosol Exterminators, Chicago, Illinois

Time spent for serviceman training is money saved for the PCO, since it cuts down on callbacks due to poor service and reduces turnover of service personnel by making the serviceman more confident in his ability. The serviceman with only hit-or-miss training can become frustrated on calls, and when he's reduced to "guessing" his way through on a pest problem, he won't be a man who enjoys his work. The outline below is one of 10 (the series began in January) prepared by the writer to help you school your servicemen trainees more efficiently in the control of pests encountered in routine service work. To get maximum benefit from these in-class sessions, however, the PCO must supplement them with training in the field.

LESSONS

Jan.: Introduction, Background
Feb.: Serviceman's Function
Mar.: What Is An Insect?
Apr.: Insecticides, Rodenticides
✓ **May:** Rat & Mouse Control
Jun.: Roaches & Their Control
Jul.: Bedbugs & Their Control
Aug.: Silverfish & Their Control
Sept.: Ants & Their Control
Oct.: Don't Be Half Safe!

Rat and Mouse Control

Scheduled For: (Date and Place)

References

Conservation Bulletin No. 8, U. S. Dept. of Interior. Supt. of Documents, U. S. Government Printing Office, Washington 25, D. C.

Control of House Mice, U. S. Fish & Wildlife Service Leaflet 349. Supt. of Documents, U. S. Government Printing Office, Washington 25, D. C.

Step By Step Rat Control. Wisc. Alumni Research Foundation, P. O. Box 2217, Madison 1, Wisc.

Rat-Borne Disease Prevention and Control. Communicable Disease Center, U. S. Public Health Service, 50 Seventh St., N. E. Atlanta 5, Ga.

Materials

1. Blackboard, Chalk
2. Sample anticoagulant, rat traps, foot pump, ratproofing materials

Object

To teach basic steps in rat and mouse control

Method

Discussion of latest control methods and their practical application

Presentation

1. Norway rat, the common rat in our area—description, life history, and characteristics
2. Food preferences of rat—grains, meat and fish, fruit and vegetables
3. Interpretation of rat and mouse droppings
4. The phases of rat control — trapping and poisoning, fumigating burrows, sanitation and ratproofing
5. Trapping techniques
6. Baiting techniques
7. Role of sanitation in rodent control
8. Points to be ratproofed
9. The house mouse — description, life history, and characteristics
10. Techniques for house mouse control

Demonstration

1. Setting traps and dusting burrows, placement of water and cereal baits side by side
2. Inspection of garbage dump for rats

Examination

1. Have trainee place rat bait, mouse bait
2. Use foot pump in burrows

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Infestation Report

Contains pertinent portions of the Department of Agriculture's **Cooperative Economic Insect Report**, material from university entomology departments and reports from readers. PCOs noticing infestations in their own areas are urged to communicate with **Pest Control** so their information may be added to this infestation report.

ANTS

Delaware: Swarming adults of Lasius claviger noted in New Castle County. **Maryland:** Ten Iridomyrmex humilis workers collected from a home in Baltimore. Probably brought to property in soil around young trees from out of state. This is not a new record for state, since this ant was found in Baltimore many years ago. It has not been reported since 1932. **New Jersey:** Flights observed and reported. **Pennsylvania:** Camponotus sp. causing considerable trouble in trailer home and in a house, Centre County.

BROWN DOG TICK
(Rhipicephalus sanguineus)

California: Apparently more numerous this year, with reports received from San Francisco and Fresno.

COCKROACHES

North Carolina: Blattella germanica difficult to control in Wake County. **Wyoming:** Supella supellectilium collected in housing in Laramie, Albany County.

TERMITES

Indiana: Reticulitermes flavipes swarming in homes in Tippecanoe County. **Kansas:** First swarm of R. flavipes of season reported at a house in Riley County. **Maryland:** Winged forms of R. flavipes noted in homes at Cambridge, Dorchester County; Silver Spring, Montgomery County; and at Centerville, Queen Annes County. **New Jersey:** Numerous flights reported. **Oklahoma:** Observed swarming in Tulsa area since early March. **Virginia:** Swarming in apartment house in Clifton Forge, Alleghany County; in house in Forest, Bedford County; in houses in Crozet, Albermarle County; and in Harrisonburg, Rockingham County. Sexual forms also emerging from beneath home in Prince William County. **Wyoming:** Caused extensive damage to house in Douglas, Converse County, and to house in Wheatland, Platte County.

TROPICAL RAT MITE
(Ornithonyssus bacoti)

California: Caused irritation to members of households in Bakersfield, Kern County, and in Carmichael, Sacramento County.

Aeroxon Advertising Campaign

Aeroxon Sales Co. of New York, N. Y., manufacturer of Aeroxon Fly Catcher Ribbons, plans a national magazine and newspaper advertising campaign to assist their distributors, according to Aeroxon President, William Cowen.

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Now! CUT YOUR PYRETHRUM COSTS 33%

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Classifieds

When answering ads where box number only is given, please address as follows: Box number, c/o Pest Control, 1900 Euclid Avenue, Cleveland 15, Ohio.

Rates: "Position Wanted" 5c per word, minimum $2.00. All other classifications, 10c per word, minimum $2.00. All classified ads must be received by Publisher the 10th of the month preceding publication date and be accompanied by cash or money order covering full payment.

POSITION WANTED

WILL MANAGE small pest control firm or branch office in California. State "B" Field Representative's license. Eight years general pest control sales, service, administration. Graduating University of California this June with Entomology degree. World War II veteran, 38, married. Box 500, Pest Control magazine.

HELP WANTED

WANTED: MANAGERS for branch offices. Rapidly expanding pest control firm requires high-type men to manage offices. Must have initiative, sales ability, and forcefulness. Prefer graduate entomologists with practical experience. Will also consider applications from men now in the pest control field, who possess good education, sound technical, and business background. Excellent opportunity to become associated with progressive organization enjoying solid financial position. Salary and percentage. Submit complete data: age, education, experience, and other pertinent details, together with photo. All replies strictly confidential. L. L. Crosby, President, Commonwealth Sanitation Co., 3567 Bigelow Blvd., Pittsburgh 13, Pa.

TECHNICAL DIRECTOR—We have a very important position for an outstanding man, with entomological and chemical background and a record of successful accomplishment, to head service department of rapidly expanding pest control firm with home offices in Pittsburgh. This is an important position for a man with experience and possessing managerial ability plus. Remuneration to meet full expectations plus opportunity for profit-sharing interest. This is an unusual opportunity for the right man. All replies strictly confidential. Submit account of academic and professional training, past affiliations, earnings, photo and any other pertinent facts to: L. L. Crosby, President, Commonwealth Sanitation Co., 3567 Bigelow Blvd., Pittsburgh 13, Pa.

TECHNICAL PERSONNEL wanted by large service-minded company. Duties to assist branch offices in pest and termite control services. Some travel and no sales required. Degree helpful but not essential. Benefits include life insurance, hospitalization, pension, paid vacation, and sick leave. Ample opportunity for advancement. Send resume including salary history. All replies confidential. Interviews in Atlanta by invitation at our expense. Write in detail to Orkin Exterminating Co., Inc., 713 W. Peachtree St., Atlanta, Ga. Attention: Technical Dept.

WORKING SUPERVISOR and for sales and service, to share in profits. Small company with big future. Send resume of experience. Box 3204, Lubbock, Tex.

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FOR SALE

OPPORTUNITY — New York City area. Ideal location. Well-run. Annual $20,000 easily doubled by ethical, aggressive young PCO or firm. Owner retiring. Willing to continue in office capacity if desired. Consider only bonafide offers with bank reference and present employer. Confidential. Box 499, Pest Control magazine.

WANT TO BUY

WILL BUY PEST CONTROL businesses. We are ready to buy several more pest control companies to add to the Commonwealth group. We prefer to retain existing management and personnel, under lucrative profit-sharing arrangements offering unusual potentialities for greatly enhancing present income. All negotiations completely confidential. Write William L. Yockey, Comptroller, Commonwealth Sanitation Co., 3567 Bigelow Blvd., Pittsburgh 13, Pa.

WILL PAY TOP PRICE for exterminating business in New York City area. Cash. Replies confidential. Box 439, Pest Control magazine.

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This amazing FUMO-KILL insecticide is by all qualifications a leader in its field.

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Bulk ..... 4.50 per lb.

Delivery Charges Prepaid

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Pestales

Don't call him, he'll call you. Here's a clever way to promote termite business through your local newspapers. Philip Rachlin of Exterminator Corp. of America, Philadelphia, Pa., ran a copyrighted article in Philadelphia papers a few weeks ago, offering to identify termites for owners within 24 hours. And the service was free, of course. "Termites," Rachlin warned his newspaper readers, "are frequently confused with flying ants, and it is important that termites are detected early before they cause extensive and expensive damage." His directions to homeowners: catch one of the mavericks, kill it, wrap it in tissue paper, then seal the corpse in an envelope and mail it to Exterminator Corp. of America. This is not only smart P-R, but it brings the prospect to Rachlin, as well.

* * *

Heard about Mable? In supplying us details of the Pacific Northwest PCO Conference (pg. 66), Bob Gold of Bob Gold's Pest Control Service, Spokane, Wash., included a couple of celluloid bombshells—pictures of Mable, a shapely, young blonde in a frail, gauzy negligee "who kept showing up in the rooms of some of the unattached men" attending the conference. "Immediate reactions varied from dismay to glee," Bob said. "Wilfred Gunn (Hollywood Termite Control, Los Angeles) had the last laugh, however, when he auctioned her off during the final session." High bidder was youngblood Merle Weaver, Weaver Exterminating Service, Portland, Oreg. Mable, incidentally, was not an official delegate to the conference — just a displaced department store mannequin.

* * *

Get-rich-quick. Looking for a new sideline market? If you can find a catskin-buyer, you might try this idea suggested in an 1875 newspaper advertisement: "We are starting in Lacon with 100,000 cats. Each cat will average 12 kittens a year. The catskins will sell for 30 cents each. One hundred men can skin 5000 cats a day. We figure a daily profit of over $10,000. Now what shall we feed the cats? We will start a rat ranch next door with 1,000,000 rats. The rats will breed 12 times faster than the cats. So we will have 4 rats to feed each day to each cat. Now what shall we feed the rats? We will feed the rats the carcasses of the cats after they have been skinned. Now Get This! We feed the rats to the cats and the cats to the rats and get the skins for nothing."

* * *

Out of the frying pan . . . Pat Laing of Laing Exterminating Co., Cleveland, has really been on the move. She spent her Easter vacation sunbathing in Nassau; now is zipping on her mackinaw for a trip to Alaska July 1.

* * *

Paris rat hunt. One week out of last month was proclaimed "rat week" in Paris, and householders, warehousemen, and concierges were asked to declare war on the burgeoning rodent population for a full seven days. Public health authorities in Paris estimate there are 6 million of these pests loose in the city —more than double the number of humans. *Sounds like the rats have really caught the spirit of Paris.*

* * *

First-class promotion. The publicity committee for this year's Canadian Pest Control Operators Conference deserves a special bouquet for its excellent mail campaign to stimulate attendance. It was professional in appearance, freshly prepared, clever and in two and four colors, and told effectively why PCOs should come. Mailings hit our office week after week. The entire approach was something that could be copied by other conference chairmen who are anxious to stimulate interest and attendance in their meetings.

* * *

On to the Olympics? They've crowned a new U. S. table tennis singles champion in the Esquire Class—Si Ratner of Ratner Exterminating Co., Washington, D.C. After 25 years on the ping pong circuit, Si grabbed the title during the championship play-offs in Los Angeles recently. Si's only comment: "Table tennis, anyone?"

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